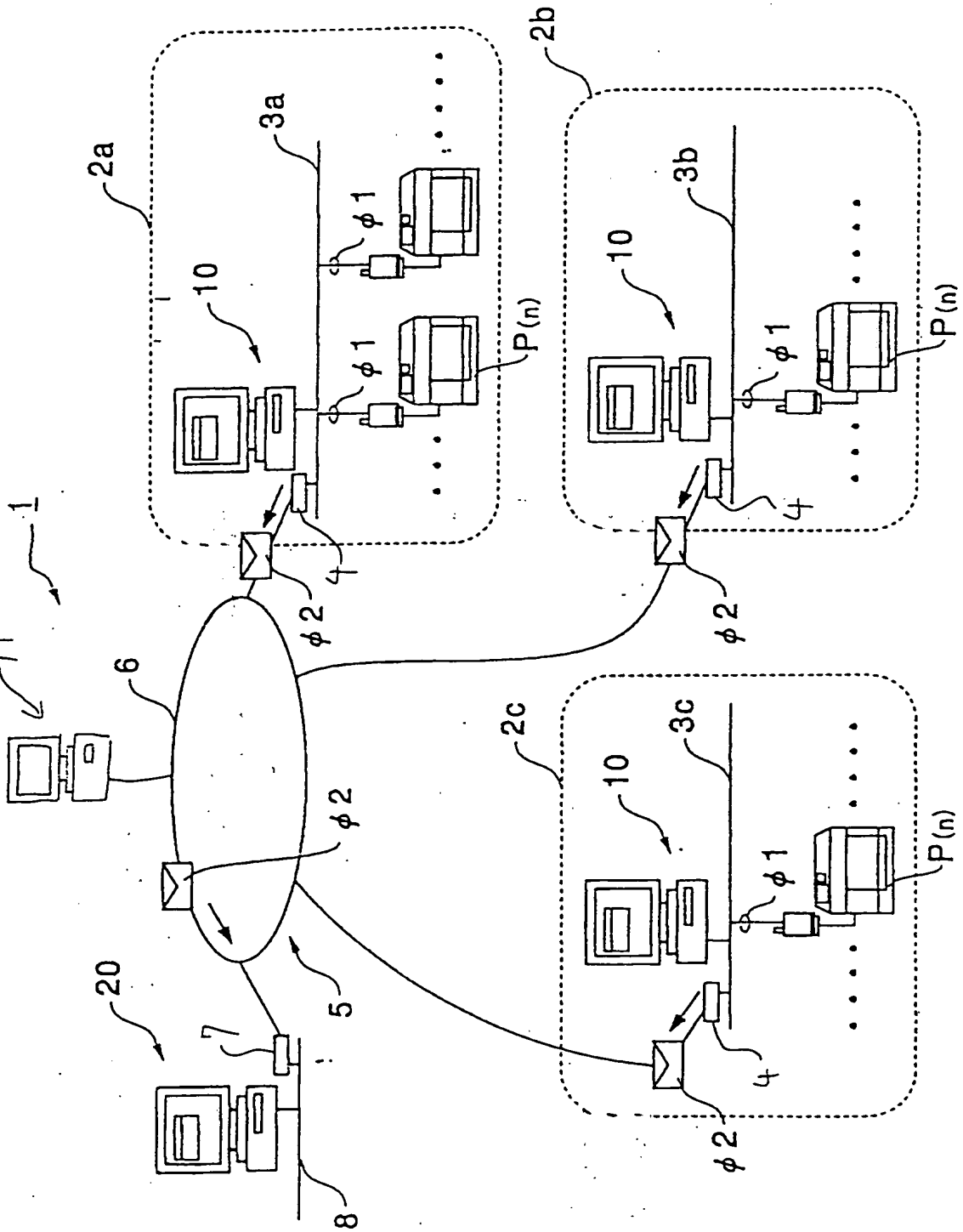
FIG. 1



06501D-2EE5226D

Fig. 2

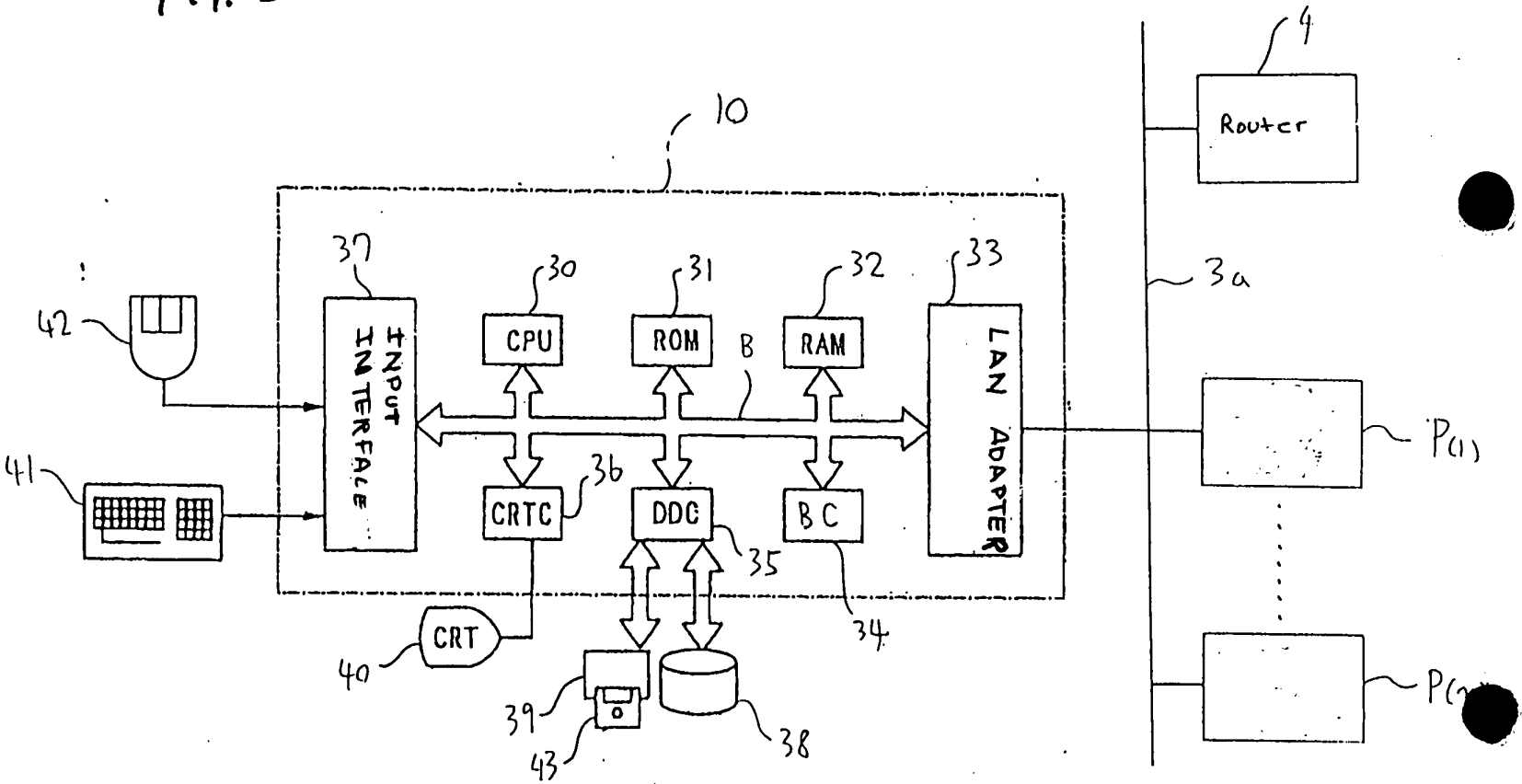


FIG. 3

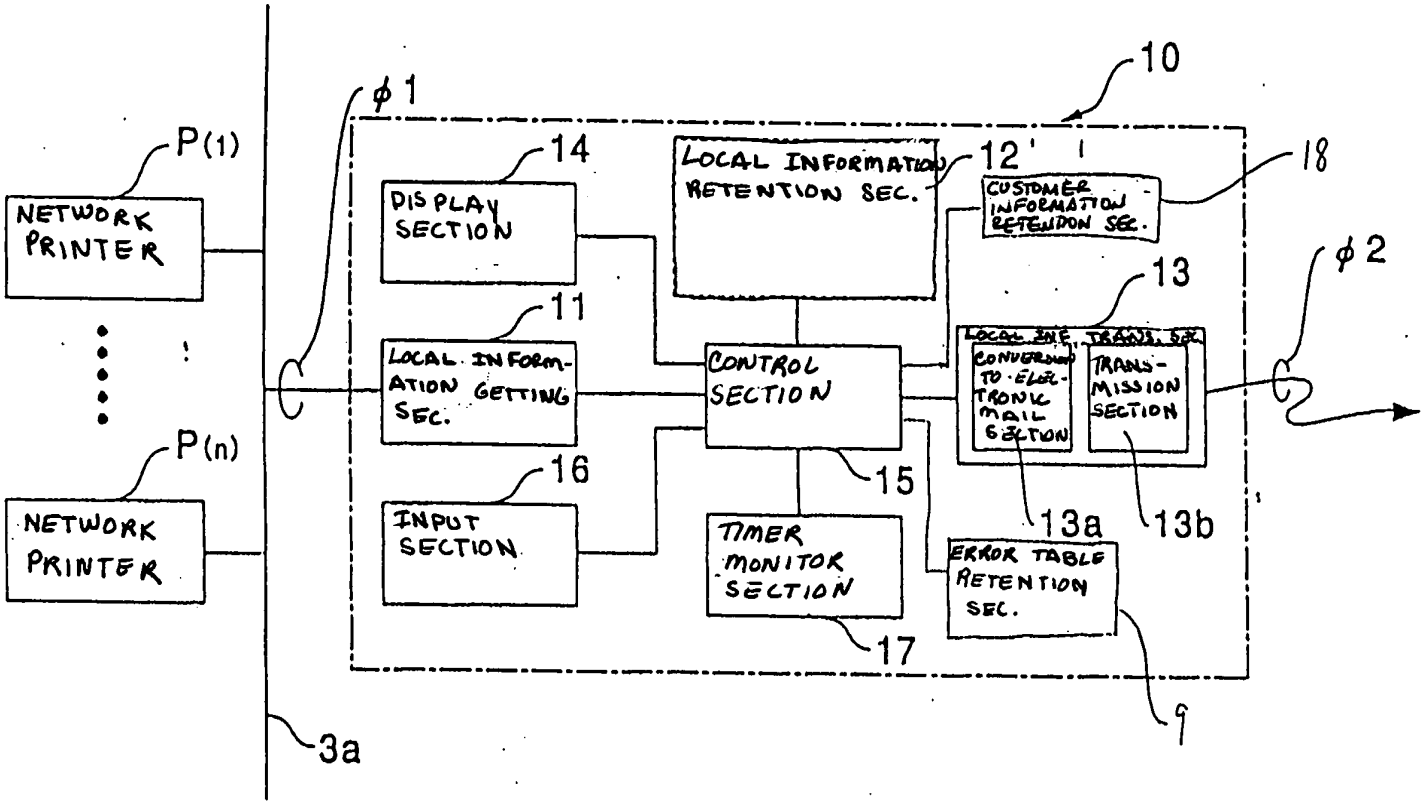

10
φ1
P(1)
NETWORK PRINTER
P(n)
NETWORK PRINTER
3a
14
DISPLAY SECTION
11
LOCAL INFORMATION GETTING SEC.
16
INPUT SECTION
LOCAL INFORMATION RETENTION SEC.
12'
CONTROL SECTION
15
TIMER MONITOR SECTION
17
18
CUSTOMER INFORMATION RETENTION SEC.
13
LOCAL INF. TRANS. SEC.
CONVERSION TO ELECTRONIC MAIL SECTION
TRANSMISSION SECTION
13a
13b
ERROR TABLE RETENTION SEC.
9
φ2

FIG. 4

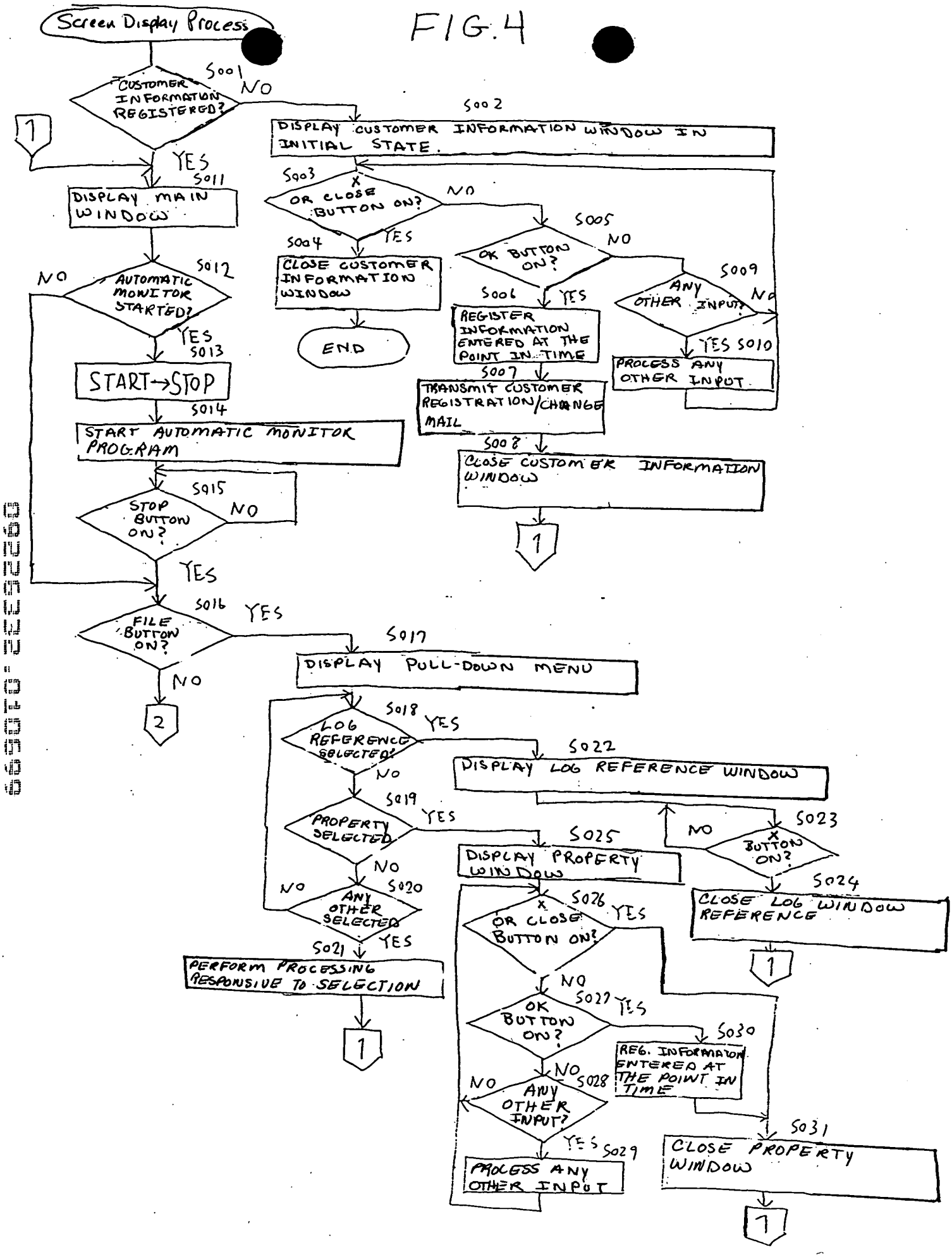

Screen Display Process
S001
CUSTOMER INFORMATION REGISTERED?
NO
YES
1
S002
DISPLAY CUSTOMER INFORMATION WINDOW IN INITIAL STATE.
S003
X OR CLOSE BUTTON ON?
NO
YES
S004
CLOSE CUSTOMER INFORMATION WINDOW
END
S005
OK BUTTON ON?
NO
YES
S006
REGISTER INFORMATION ENTERED AT THE POINT IN TIME
S007
TRANSMIT CUSTOMER REGISTRATION/CHANGE MAIL
S008
CLOSE CUSTOMER INFORMATION WINDOW
1
S009
ANY OTHER INPUT?
NO
YES S010
PROCESS ANY OTHER INPUT
S011
DISPLAY MAIN WINDOW
S012
AUTOMATIC MONITOR STARTED?
NO
YES
S013
START→STOP
S014
START AUTOMATIC MONITOR PROGRAM
S015
STOP BUTTON ON?
NO
YES
S016
FILE BUTTON ON?
YES
NO
2
S017
DISPLAY PULL-DOWN MENU
S018
LOG REFERENCE SELECTED?
YES
NO
S022
DISPLAY LOG REFERENCE WINDOW
S023
X BUTTON ON?
NO
YES
S024
CLOSE LOG WINDOW REFERENCE
1
S019
PROPERTY SELECTED
YES
NO
S025
DISPLAY PROPERTY WINDOW
S020
ANY OTHER SELECTED
NO
YES
S021
PERFORM PROCESSING RESPONSIVE TO SELECTION
1
S026
X OR CLOSE BUTTON ON?
YES
NO
S027
OK BUTTON ON?
YES
NO
S030
REG. INFORMATION ENTERED AT THE POINT IN TIME
S028
ANY OTHER INPUT?
NO
YES
S029
PROCESS ANY OTHER INPUT
S031
CLOSE PROPERTY WINDOW
1

FIG. 5

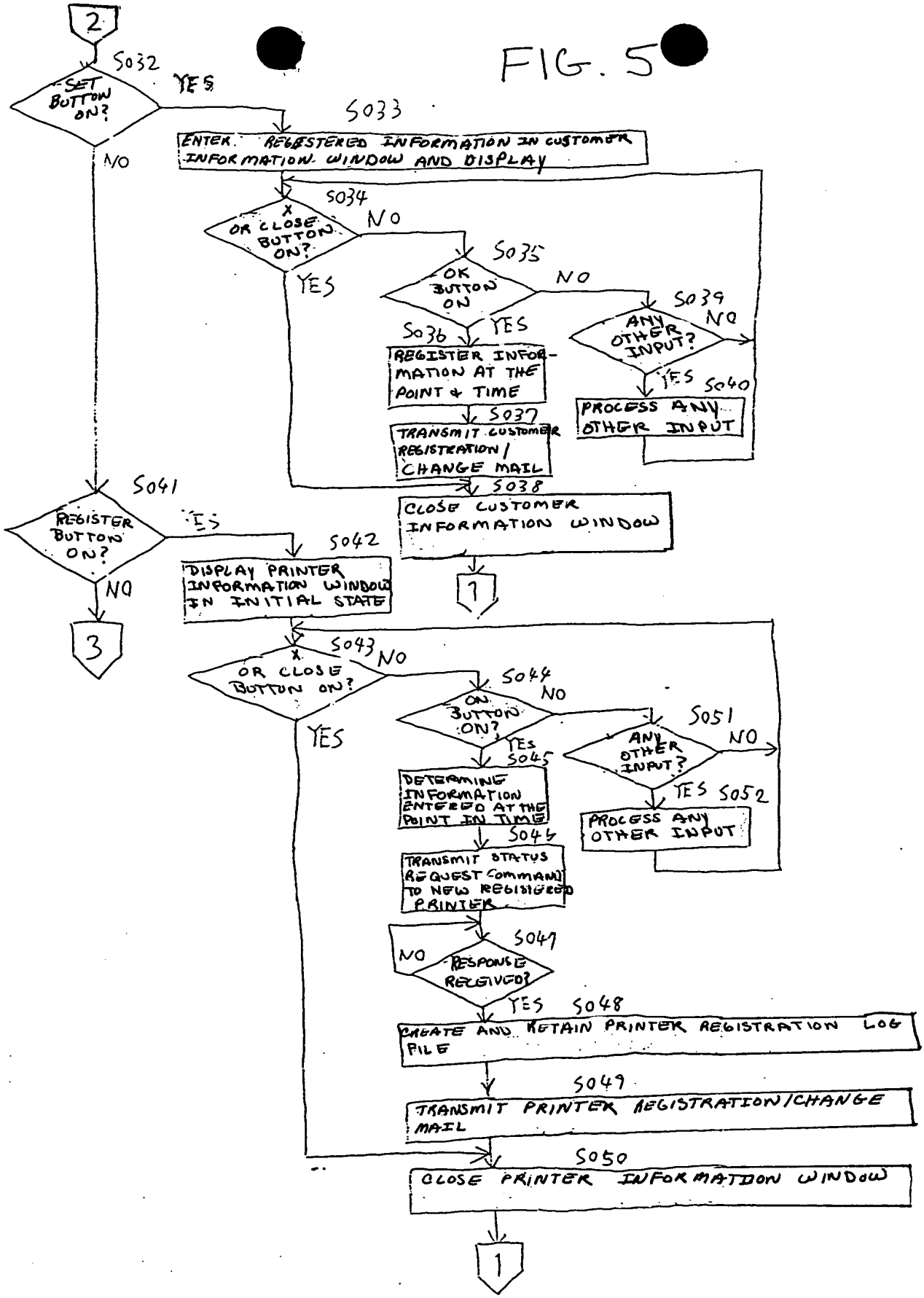
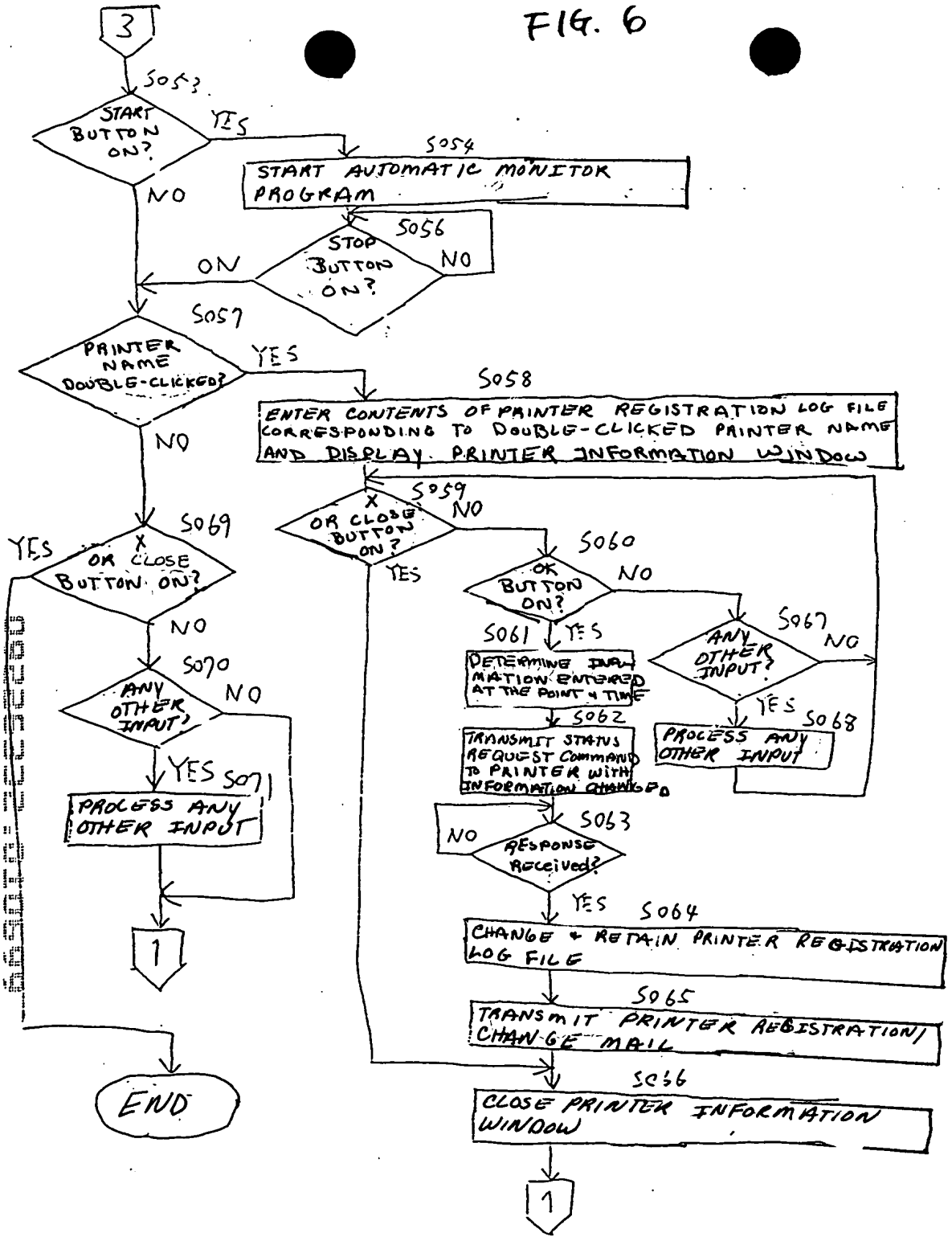

2
S032
SET BUTTON ON?
YES
NO
S033
ENTER REGISTERED INFORMATION IN CUSTOMER INFORMATION WINDOW AND DISPLAY
S034
X OR CLOSE BUTTON ON?
NO
YES
S035
OK BUTTON ON
NO
YES
S036
REGISTER INFORMATION AT THE POINT & TIME
S037
TRANSMIT CUSTOMER REGISTERATION / CHANGE MAIL
S039
ANY OTHER INPUT?
NO
YES
S040
PROCESS ANY OTHER INPUT
S038
CLOSE CUSTOMER INFORMATION WINDOW
1
S041
REGISTER BUTTON ON?
YES
NO
3
S042
DISPLAY PRINTER INFORMATION WINDOW IN INITIAL STATE
S043
X OR CLOSE BUTTON ON?
NO
YES
S044
ON BUTTON ON?
NO
YES
S045
DETERMINE INFORMATION ENTERED AT THE POINT IN TIME
S046
TRANSMIT STATUS REQUEST COMMAND TO NEW REGISTERED PRINTER
S047
NO
RESPONSE RECEIVED?
YES
S051
ANY OTHER INPUT?
NO
YES
S052
PROCESS ANY OTHER INPUT
S048
CREATE AND RETAIN PRINTER REGISTRATION LOG FILE
S049
TRANSMIT PRINTER REGISTRATION/CHANGE MAIL
S050
CLOSE PRINTER INFORMATION WINDOW
1

FIG. 6


3
S053
START BUTTON ON?
YES
NO
S054
START AUTOMATIC MONITOR PROGRAM
S056
STOP BUTTON ON?
NO
ON
S057
PRINTER NAME DOUBLE-CLICKED?
YES
NO
S058
ENTER CONTENTS OF PRINTER REGISTRATION LOG FILE CORRESPONDING TO DOUBLE-CLICKED PRINTER NAME AND DISPLAY PRINTER INFORMATION WINDOW
S059
X OR CLOSE BUTTON ON?
NO
YES
S060
OK BUTTON ON?
NO
YES
S061
DETERMINE INFORMATION ENTERED AT THE POINT OF TIME
S062
TRANSMIT STATUS REQUEST COMMAND TO PRINTER WITH INFORMATION CHANGED
S063
RESPONSE RECEIVED?
NO
YES
S064
CHANGE & RETAIN PRINTER REGISTRATION LOG FILE
S065
TRANSMIT PRINTER REGISTRATION CHANGE MAIL
S066
CLOSE PRINTER INFORMATION WINDOW
1
S067
ANY OTHER INPUT?
NO
YES
S068
PROCESS ANY OTHER INPUT
S069
X OR CLOSE BUTTON ON?
YES
NO
S070
ANY OTHER INPUT?
NO
YES
S071
PROCESS ANY OTHER INPUT
1
END

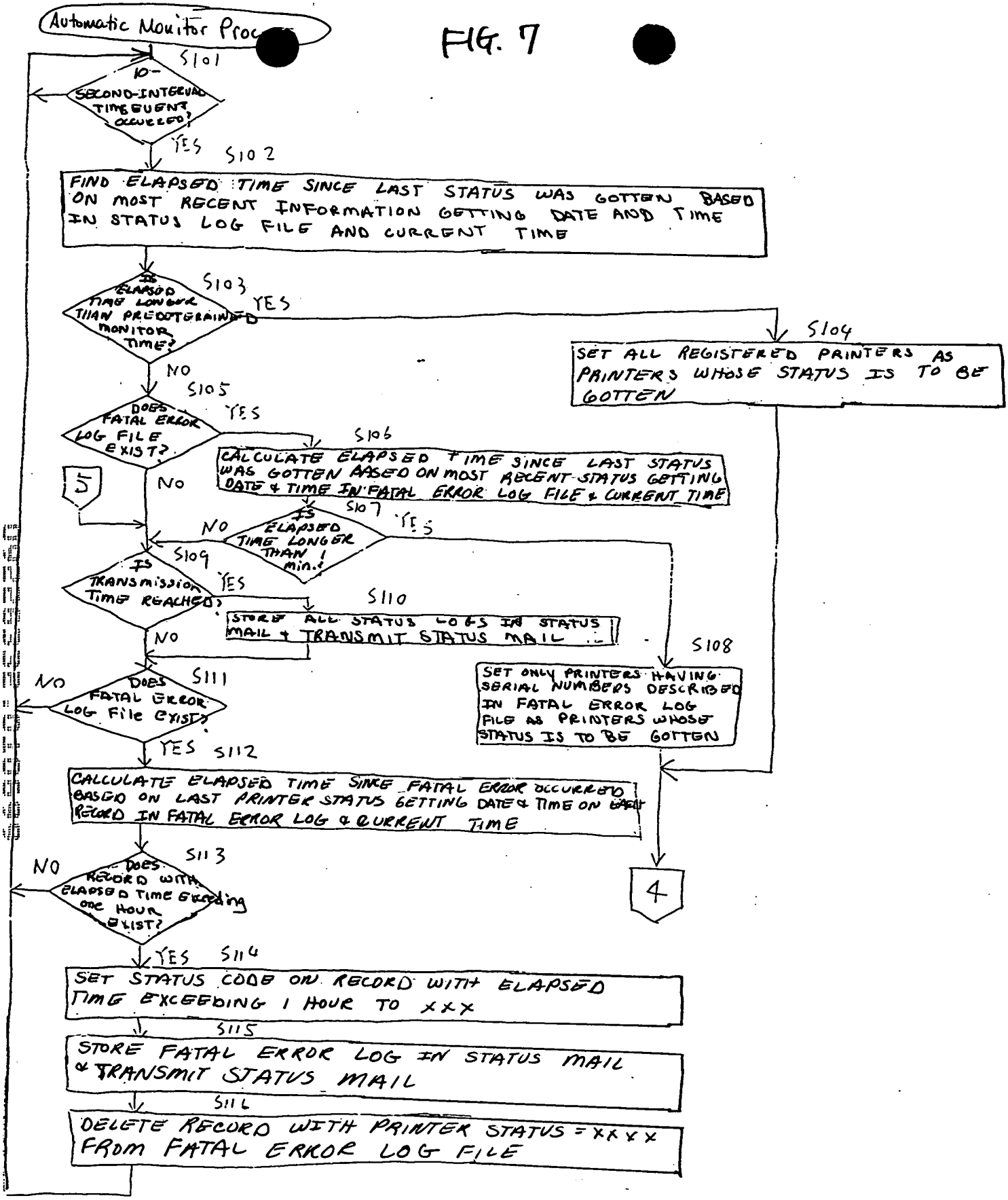

Automatic Monitor Proc
S101
10-SECOND-INTERVAL TIME EVENT OCCURRED?
YES
S102
FIND ELAPSED TIME SINCE LAST STATUS WAS GOTTEN BASED ON MOST RECENT INFORMATION GETTING DATE AND TIME IN STATUS LOG FILE AND CURRENT TIME
S103
IS ELAPSED TIME LONGER THAN PREDETERMINED MONITOR TIME?
YES
S104
SET ALL REGISTERED PRINTERS AS PRINTERS WHOSE STATUS IS TO BE GOTTEN
NO
S105
DOES FATAL ERROR LOG FILE EXIST?
YES
S106
CALCULATE ELAPSED TIME SINCE LAST STATUS WAS GOTTEN BASED ON MOST RECENT STATUS GETTING DATE & TIME IN FATAL ERROR LOG FILE & CURRENT TIME
No
S107
IS ELAPSED TIME LONGER THAN 1 min.?
NO
YES
S109
IS TRANSMISSION TIME REACHED?
YES
S110
STORE ALL STATUS LOGS IN STATUS MAIL & TRANSMIT STATUS MAIL
NO
S108
SET ONLY PRINTERS HAVING SERIAL NUMBERS DESCRIBED IN FATAL ERROR LOG FILE AS PRINTERS WHOSE STATUS IS TO BE GOTTEN
S111
DOES FATAL ERROR LOG FILE EXIST?
NO
YES
S112
CALCULATE ELAPSED TIME SINCE FATAL ERROR OCCURRED BASED ON LAST PRINTER STATUS GETTING DATE & TIME ON EACH RECORD IN FATAL ERROR LOG & CURRENT TIME
S113
DOES RECORD WITH ELAPSED TIME EXCEEDING ONE HOUR EXIST?
NO
YES
S114
SET STATUS CODE ON RECORD WITH ELAPSED TIME EXCEEDING 1 HOUR TO XXX
S115
STORE FATAL ERROR LOG IN STATUS MAIL & TRANSMIT STATUS MAIL
S116
DELETE RECORD WITH PRINTER STATUS = XXXX FROM FATAL ERROR LOG FILE
4

FIG. 7

FIG. 8

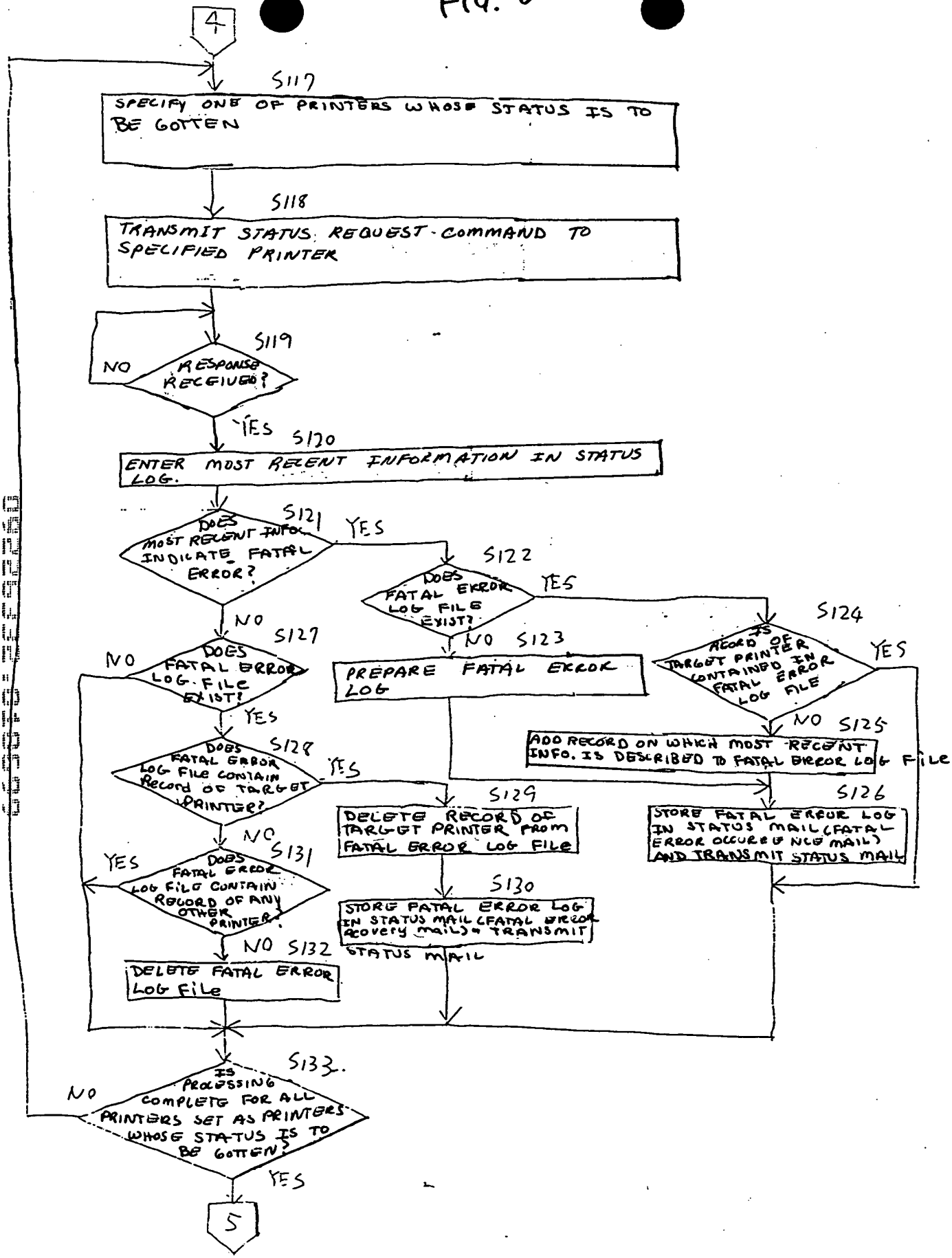

4
S117
SPECIFY ONE OF PRINTERS WHOSE STATUS IS TO BE GOTTEN
S118
TRANSMIT STATUS REQUEST COMMAND TO SPECIFIED PRINTER
S119
RESPONSE RECEIVED?
NO
YES
S120
ENTER MOST RECENT INFORMATION IN STATUS LOG.
S121
DOES MOST RECENT INFO. INDICATE FATAL ERROR?
YES
NO
S122
DOES FATAL ERROR LOG FILE EXIST?
YES
NO
S123
PREPARE FATAL ERROR LOG
S124
IS RECORD OF TARGET PRINTER CONTAINED IN FATAL ERROR LOG FILE
YES
NO
S125
ADD RECORD ON WHICH MOST RECENT INFO. IS DESCRIBED TO FATAL ERROR LOG FILE
S127
DOES FATAL ERROR LOG FILE EXIST?
NO
YES
S128
DOES FATAL ERROR LOG FILE CONTAIN RECORD OF TARGET PRINTER?
YES
NO
S129
DELETE RECORD OF TARGET PRINTER FROM FATAL ERROR LOG FILE
S126
STORE FATAL ERROR LOG IN STATUS MAIL (FATAL ERROR OCCURED NOW MAIL) AND TRANSMIT STATUS MAIL
S131
DOES FATAL ERROR LOG FILE CONTAIN RECORD OF ANY OTHER PRINTER?
YES
NO
S130
STORE FATAL ERROR LOG IN STATUS MAIL (FATAL ERROR RECOVERY MAIL) & TRANSMIT STATUS MAIL
S132
DELETE FATAL ERROR LOG FILE
S133
IS PROCESSING COMPLETE FOR ALL PRINTERS SET AS PRINTERS WHOSE STATUS IS TO BE GOTTEN?
NO
YES
5

FIG. 9

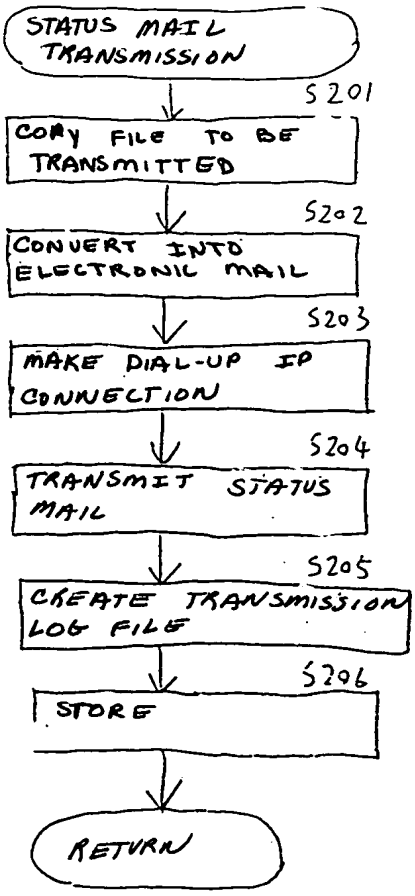

STATUS MAIL TRANSMISSION
S201
COPY FILE TO BE TRANSMITTED
S202
CONVERT INTO ELECTRONIC MAIL
S203
MAKE DIAL-UP IP CONNECTION
S204
TRANSMIT STATUS MAIL
S205
CREATE TRANSMISSION LOG FILE
S206
STORE
RETURN

FIG. 10

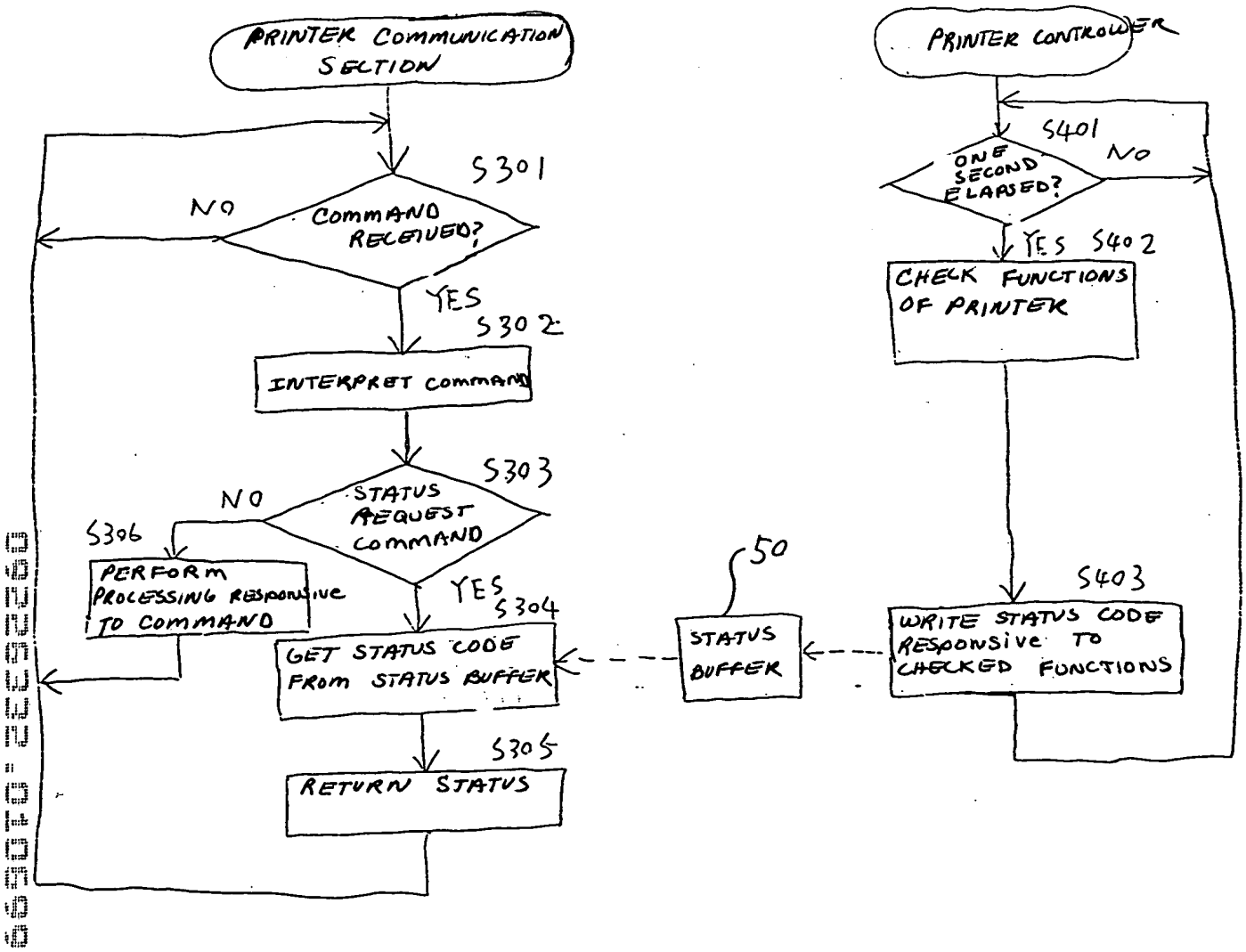

PRINTER COMMUNICATION SECTION
S301
COMMAND RECEIVED?
NO
YES
S302
INTERPRET COMMAND
S303
STATUS REQUEST COMMAND
NO
S306
PERFORM PROCESSING RESPONSIVE TO COMMAND
YES
S304
GET STATUS CODE FROM STATUS BUFFER
S305
RETURN STATUS
50
STATUS BUFFER
PRINTER CONTROLLER
S401
ONE SECOND ELAPSED?
NO
YES
S402
CHECK FUNCTIONS OF PRINTER
S403
WRITE STATUS CODE RESPONSIVE TO CHECKED FUNCTIONS

FIG. 11

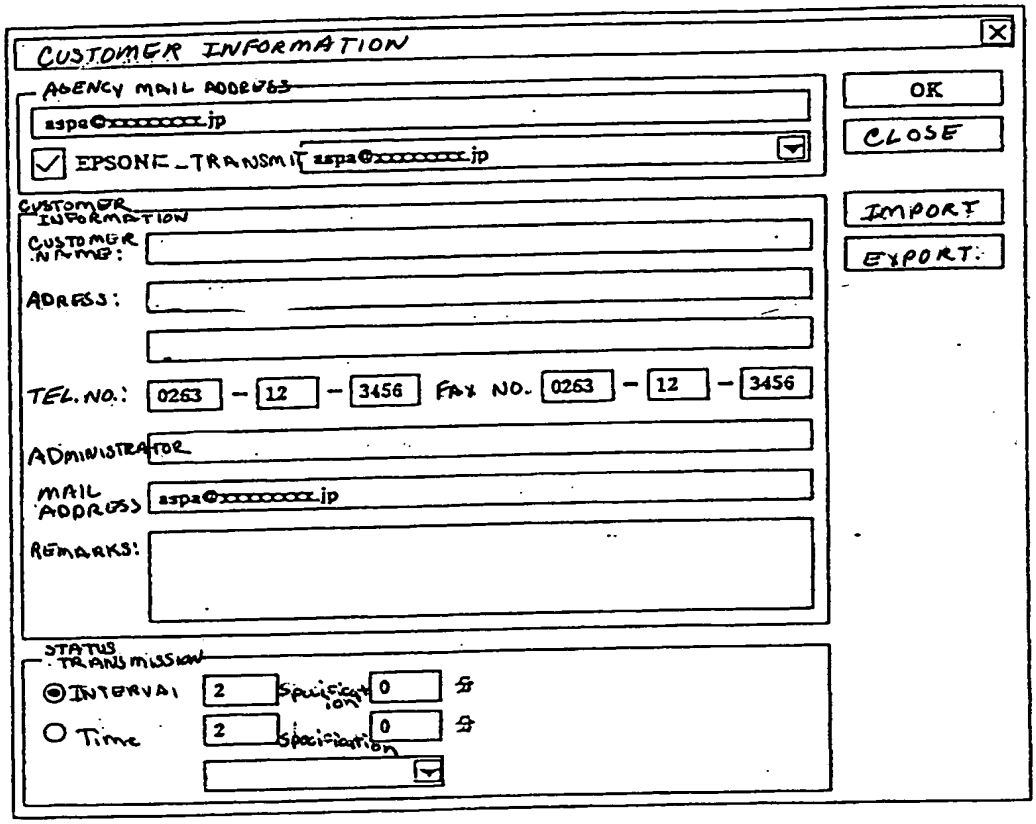

CUSTOMER INFORMATION
AGENCY MAIL ADDRESS
aspa@xxxxxxxx.jp
EPSONET_TRANSMIT
aspa@xxxxxxxx.jp
OK
CLOSE
IMPORT
EXPORT
CUSTOMER INFORMATION
CUSTOMER NAME:
ADRESS:
TEL.NO.: 0263 - 12 - 3456
FAX NO. 0263 - 12 - 3456
ADMINISTRATOR
MAIL ADDRESS
aspa@xxxxxxxx.jp
REMARKS:
STATUS TRANSMISSION
INTERVAL 2 Specification 0
Time 2 Specification 0

FIG. 12

MAIL HEADER FORMAT

φ5

Item	MESSAGE
Subject:	CDS CustomerMessage

MAIL TEXT FORMAT

CUSTOMER NAME BEFORE CHANGE	CUSTOMER NAME BEFORE CHANGE (BLANK FOR NEW CUSTOMER)
CUSTOMER NAME AFTER CHANGE	CUSTOMER NAME BEFORE CHANGE (DITTO FOR NEW CUSTOMER)
ADDRESS 1	CUSTOMER ADDRESS
ADDRESS 2	CUSTOMER ADDRESS
Tel 1, Tel 2, Tel 3	CUSTOMER Telephone NUMBER
FAX 1, FAX 2, FAX 3	CUSTOMER FAX NUMBER
ADMINISTRATOR	CUSTOMER ADMINISTRATOR
MAIL ADDRESS	MAIL ADDRESS OF AGENT UNIT ADMINISTRATOR
REMARKS	REMARKS
UPDATE DATE & TIME	LAST UPDATE DATE & TIME IN AGENT UNIT

FIG. 13

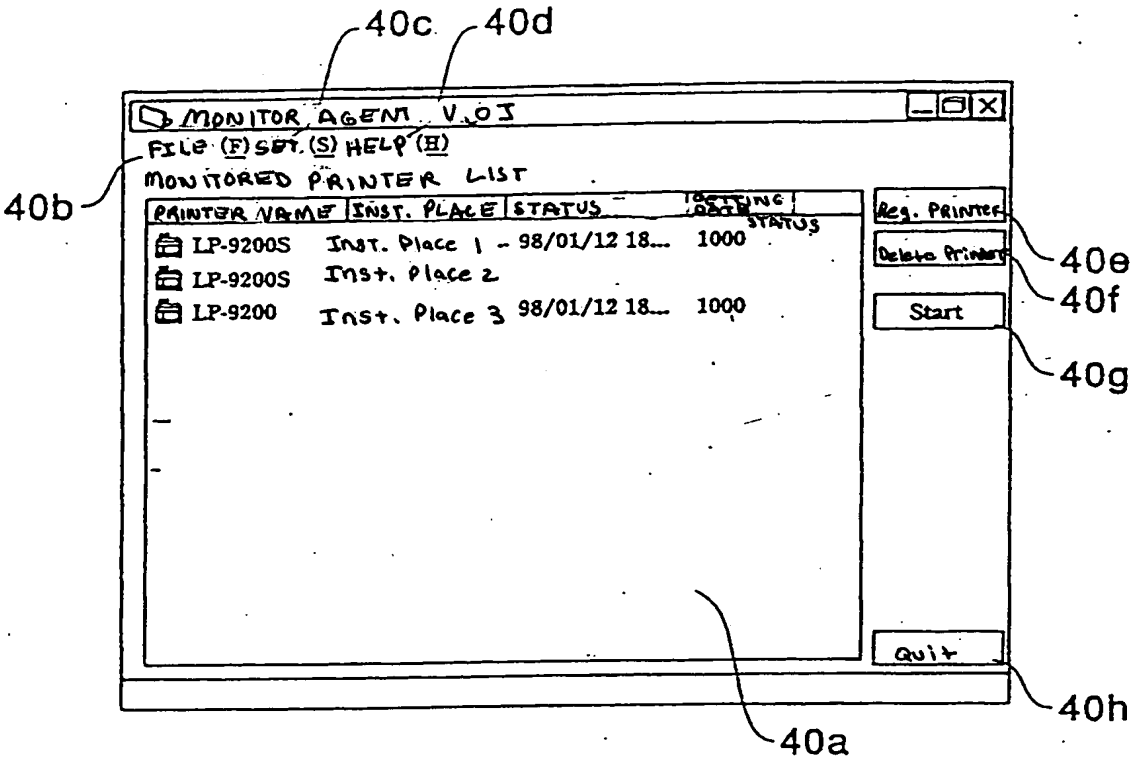

40c
40d
MONITOR AGENT V.0J
FILE (F) SET. (S) HELP (H)
40b
MONITORED PRINTER LIST
PRINTER NAME
INST. PLACE
STATUS
SETTING DATE
STATUS
LP-9200S Inst. Place 1 - 98/01/12 18... 1000
LP-9200S Inst. Place 2
LP-9200 Inst. Place 3 98/01/12 18... 1000
Reg. Printer
Delete Printer
Start
Quit
40e
40f
40g
40h
40a

FIG. 14

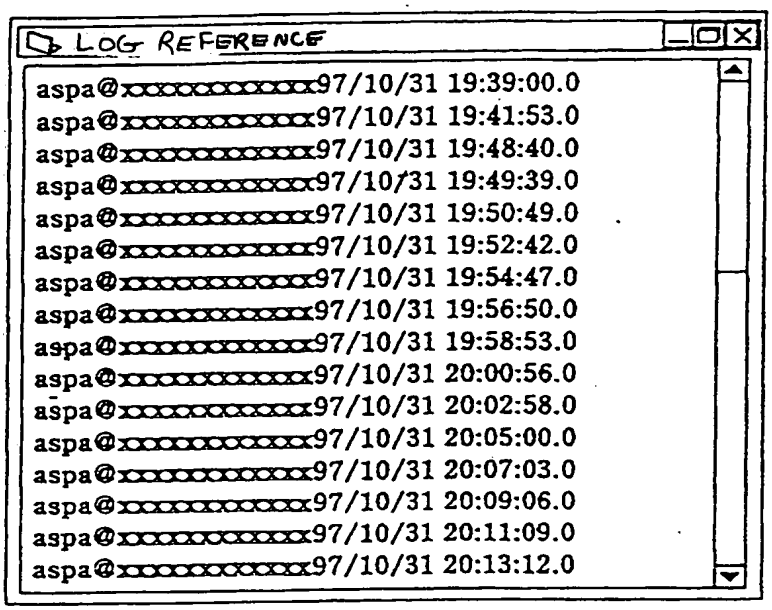

LOG REFERENCE
aspa@xxxxxxxxxxxx97/10/31 19:39:00.0
aspa@xxxxxxxxxxxx97/10/31 19:41:53.0
aspa@xxxxxxxxxxxx97/10/31 19:48:40.0
aspa@xxxxxxxxxxxx97/10/31 19:49:39.0
aspa@xxxxxxxxxxxx97/10/31 19:50:49.0
aspa@xxxxxxxxxxxx97/10/31 19:52:42.0
aspa@xxxxxxxxxxxx97/10/31 19:54:47.0
aspa@xxxxxxxxxxxx97/10/31 19:56:50.0
aspa@xxxxxxxxxxxx97/10/31 19:58:53.0
aspa@xxxxxxxxxxxx97/10/31 20:00:56.0
aspa@xxxxxxxxxxxx97/10/31 20:02:58.0
aspa@xxxxxxxxxxxx97/10/31 20:05:00.0
aspa@xxxxxxxxxxxx97/10/31 20:07:03.0
aspa@xxxxxxxxxxxx97/10/31 20:09:06.0
aspa@xxxxxxxxxxxx97/10/31 20:11:09.0
aspa@xxxxxxxxxxxx97/10/31 20:13:12.0

FIG. 15

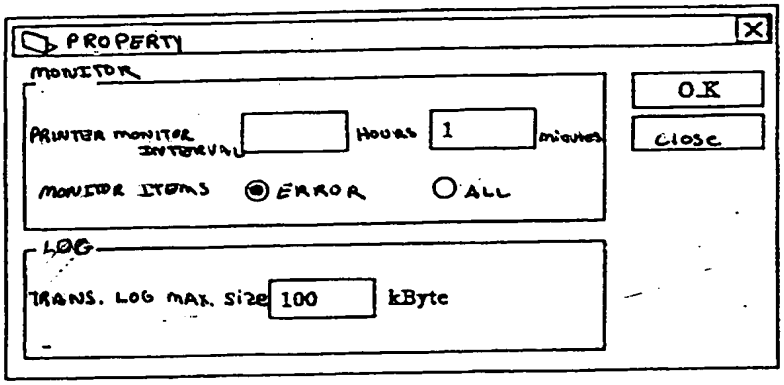

PROPERTY
MONITOR
PRINTER MONITOR INTERVAL
Hours
1
minutes
MONITOR ITEMS
ERROR
ALL
LOG
TRANS. LOG MAX. SIZE
100
kByte
O.K
Close

FIG. 16

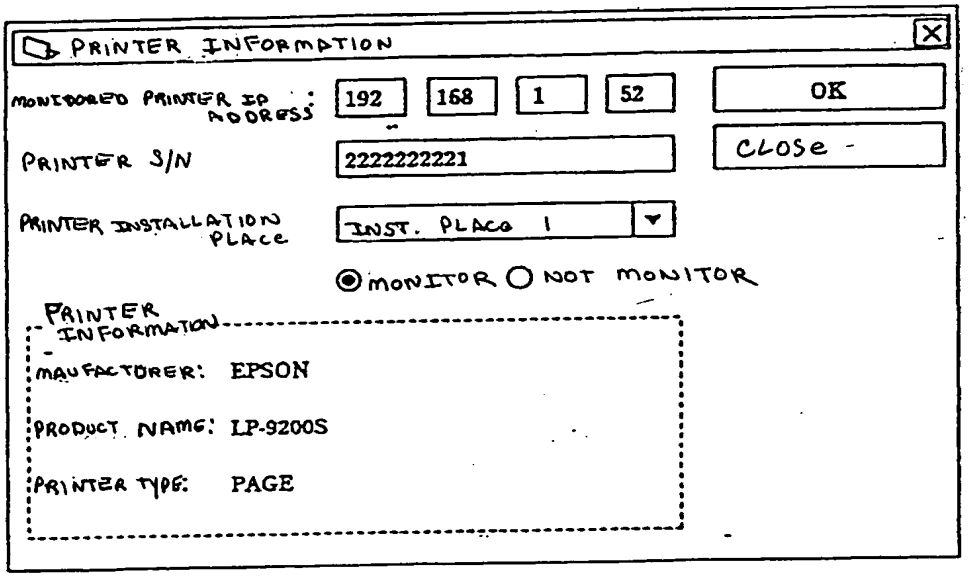

PRINTER INFORMATION
MONITORED PRINTER IP ADDRESS :
192
168
1
52
OK
PRINTER S/N
2222222221
CLOSE
PRINTER INSTALLATION PLACE
INST. PLACE 1
MONITOR
NOT MONITOR
PRINTER INFORMATION
MAUFACTURER: EPSON
PRODUCT NAME: LP-9200S
PRINTER TYPE: PAGE

FIG. 17

12c

IP ADDRESS	IP ADDRESS OF PRINTER
SERIAL NUMBER	SERIAL NUMBER OF PRINTER MONITORED BY AGENT UNIT EXAMPLE: AAX0027122
PRINTER INSTALLATION PLACE	INSTALLATION PLACE OF PRINTER
PRINTER MANUFACTURE NAME	MANUFACTUREK NAME OF PRINTER
MODEL NAME	PRINTER NAME
PRINTER TYPE	PAGE: PAGE PRINTER COLOR PAGE: COLOR PAGE PRINTER
MONITOR FLAG	DETERMINATION AS TO WHETHER OR NOT PRINTER IS TO BE MONITORED 0: NOT MONITOR 1: MONITOR
DATE & TIME	DATE & TIME AT WHICH STATUS WAS GOTTEN
STATUS CODE	CORRENT STATUS CODE

FIG. 18

φ4

MAIL HEADER FORMAT

ITEM	MESSAGE
Subject	CDS PrinterMessage

MAIL TEX FORMAT

SER. # BEFORE change	,	SER. # AFTER CHANGE	,	PRINTER INST. PLACE	,	PRINTER NAME	,				
PRINTER TYPE	,	CUST. NAME	,	ADDRESS 1	,	ADDRESS 2	,	Tel. 1	,		
Tel. 2	,	Tel. 3	,	FAX 1	,	FAX 2	,				
FAX 3	,	ADMINISTRATOR	,	MAIL ADDRESS	,	REMARKS	,				
UPDATE DATE & TIME	¥n										

F 19

12a

FIELD NAME	DESCRIPTION
CUSTOMER MAIL ADDRESS	MAIL ADDRESS OF CUSTOMER HAVING PRINTER WHOSE STATUS WAS GOTTEN
INFORMATION GETTING DATE & TIME	DATE & TIME WHICH MONITOR AGENT MONITORED FORMAT EXAMPLE: 1997/09/30 13:39:17
S/N	SERIAL NUMBER OF PRINTER
PRINTER STATUS	STATUS CODE OF PRINTER MONITORED BY MONITOR AGENT
TONER REMAINING AMT.	TONER REMAINING AMOUNT % IN PRINTER STATUS
INK REMAINING AMT. 1	INK Remaining Amt Black
INK Remaining Amt. 2	INK Remaining Amt Cyan
INK Remaining Amt. 3	INK Remaining : Magenta
INK Remaining Amt. 4	INK Remaining : Yellow
WASTE TONER	WASTE TONER BOX USE AMOUNT
OIL ROLL	OIL ROLL REMAINING AMOUNT
Photosensitive unit Remaining Life	Remaining Life of Photosensitive Unit in Printer STATUS
TOT. # OF PRINT SHEETS	TOT. # OF PRINT SHEETS
TOT. # OF PRINT SHEETS in Terms of MONOCHROME PRINT	TOT. # OF PRINT Sheets in terms of Monochrome Print
COLOR RATIO	COLOR PRINT RATIO

FIG. 20

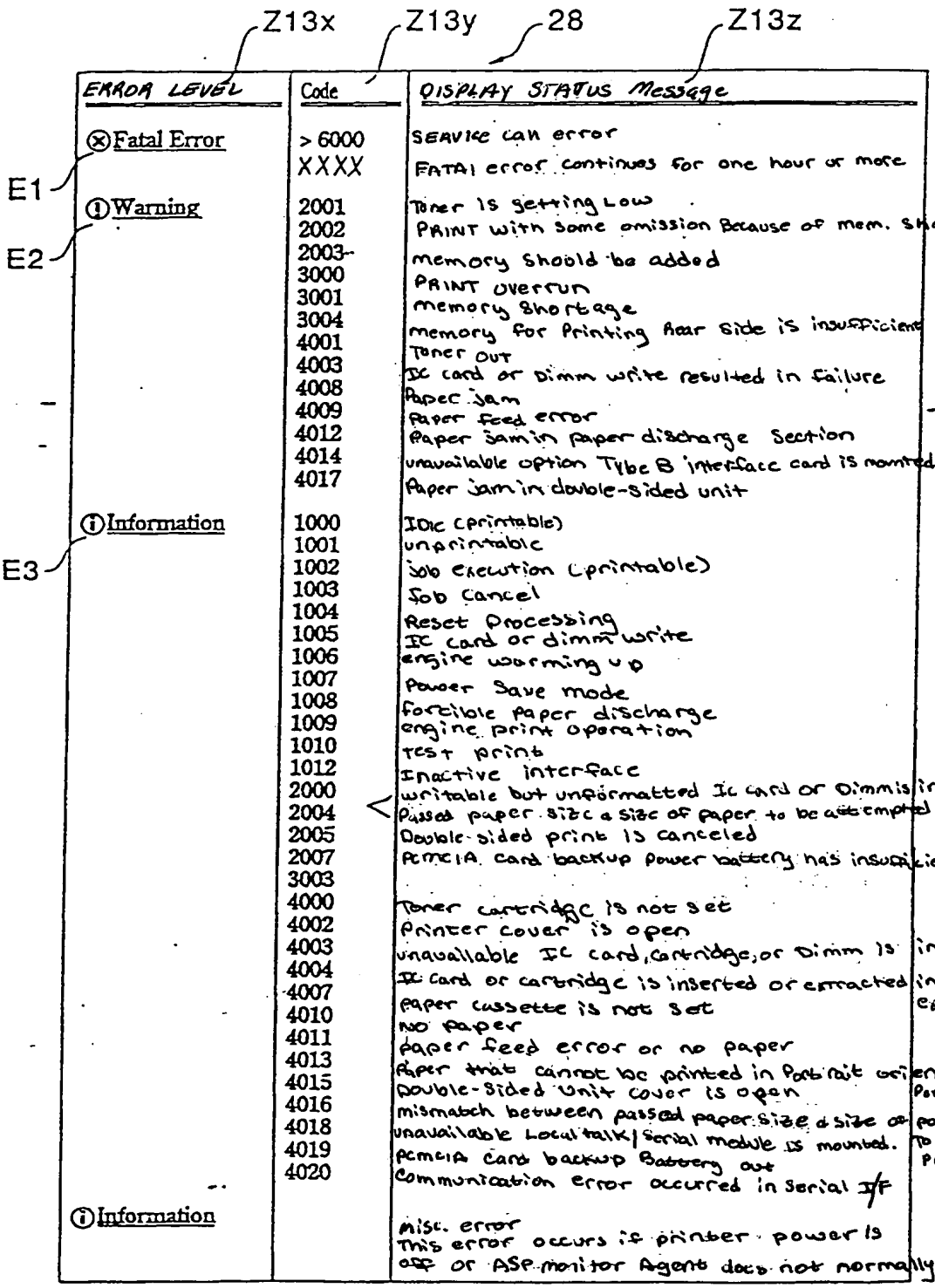

Z13x
Z13y
28
Z13z
ERROR LEVEL
Code
DISPLAY STATUS Message
⊗Fatal Error
E1
> 6000
XXXX
SERVICE CALL ERROR
FATAL error continues for one hour or more
ⓘWarning
E2
2001
2002
2003
3000
3001
3004
4001
4003
4008
4009
4012
4014
4017
Toner is getting Low
PRINT with some omission Because of mem. shortage
memory should be added
PRINT OVERRUN
memory shortage
memory for Printing Rear Side is insufficient
Toner OUT
IC card or DIMM write resulted in failure
Paper Jam
Paper feed error
Paper Jam in paper discharge Section
unavailable option Type B interface card is mounted
Paper Jam in double-sided unit
ⓘInformation
E3
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1012
2000
2004
2005
2007
3003
4000
4002
4003
4004
4007
4010
4011
4013
4015
4016
4018
4019
4020
IDIC (printable)
unprintable
Job execution (printable)
Job cancel
Reset Processing
IC card or DIMM write
engine warming up
Power Save mode
forcible paper discharge
engine print operation
test print
Inactive interface
writable but unformatted IC card or DIMM is inserted
Passed paper size & size of paper to be attempted to print do not match
Double-sided print is canceled
PCMCIA card backup power battery has insufficient capacity
Toner cartridge is not set
Printer cover is open
unavailable IC card, cartridge, or DIMM is inserted
IC card or cartridge is inserted or extracted in INSERTION/ extraction Inhibit mode
paper cassette is not set
NO PAPER
paper feed error or no paper
Paper that cannot be printed in Portrait orientation is set in Portrait orientation
Double-Sided Unit cover is open
mismatch between passed paper size & size of paper to be attempted to print double-sided Print mode
unavailable LocalTalk/Serial module is mounted.
PCMCIA card backup Battery out
Communication error occurred in Serial I/F
ⓘInformation
Misc. error
This error occurs if printer power is off or ASP monitor Agent does not normally operate.

FIG.21

Information getting date and time	Date and time at which fatal error occurred. Used as one-hour continuation determination. Format example: 97/09/30 AM 1:39:17
Printer serial number	Serial number of printer monitored by agent unit. Example: AAX0027122
IP Address	IP address of printer to be monitored for one-hour continuation.
Printer type	Page: Page Printer Color Page: Color Page Printer
Status Code	Status code when fatal error occurred.

EP 0 903 674 A2

FIG. 22

Mail Header Format

Item	Message
Subject:	CDS Message: Mail Address

Mail Test Format

Field Name	Description
Customer mail address	Mail address of customer having printer whose status was gotten.
Information getting date and time	Date and time at monitor agent monitored. Format example: 1997/09/30 13:39:17
S/N	Serial number of printer.
Printer Status	Status code of printer monitored by monitor agent
Toner remaining amount	Toner remaining amount (%) in printer status.
Ink remaining amount 1	Ink remaining amount (%): Black
Ink remaining amount 2	Ink remaining amount (%): Cyan
Ink remaining amount 3	Ink remaining amount (%): Magenta
Ink remaining amount 4	Ink remaining amount (%): Yellow
Waste toner	Waste toner box use amount
Oil roll	Oil roll remaining amount
Photosensitive unit remaining life	Remaining life of photosensitive unit in printer status.
Total number of print sheets	Total number of print sheets.
Total number of print sheets in terms of monochrome print	Total number of print sheets in terms of monochrome print.
Color ratio	Color print ratio.

FIG. 23

Transmission destination mail address	Mail address of console unit to which mail is to be transmitted. Example: aspc@xxxxxx.co.jp.
Serial number	Serial number of printer monitored by agent unit. Example: AAX0027122
Transmission date and time	Date and time at which agent unit transmitted status. Example: 97/09/30 AM 1:39:17
Transmission status	Mail transmission status. 0: Normal, not 0: error

FIG. 24

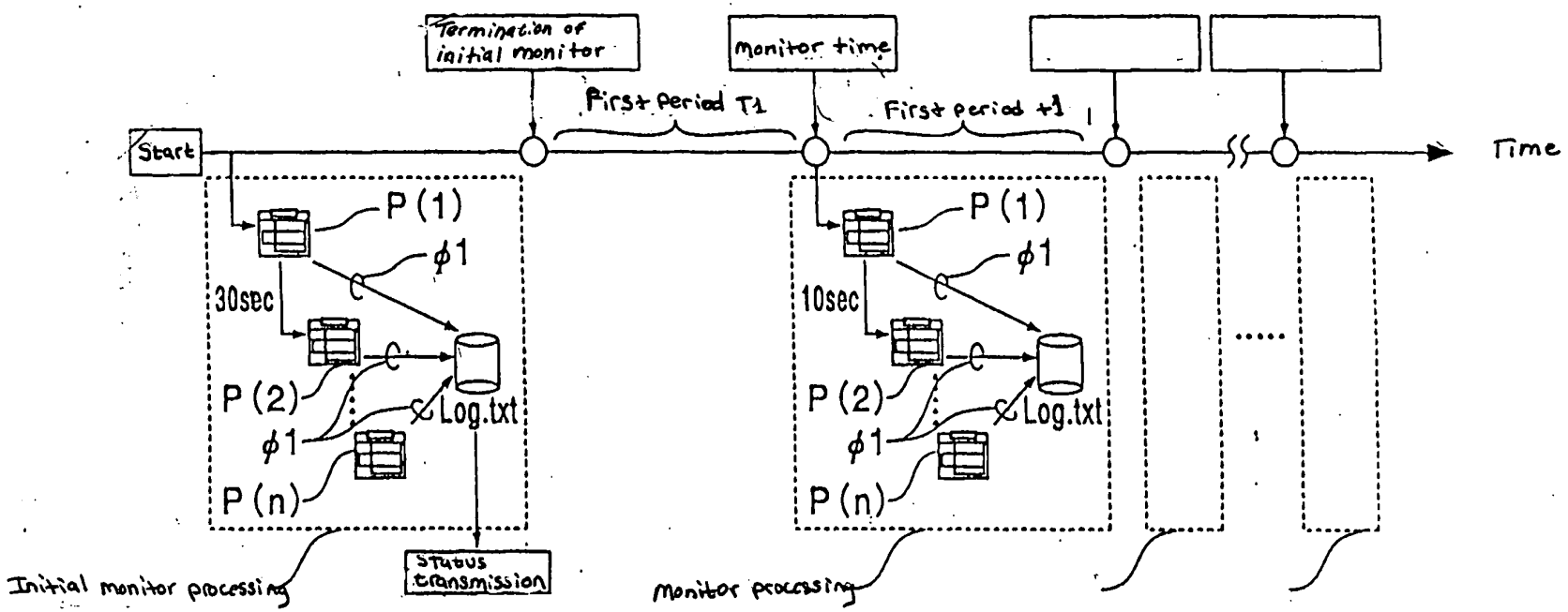

Termination of initial monitor
monitor time
First period T1
First period t1
Start
Time
P (1)
φ1
30sec
P (2)
φ1
P (n)
Log.txt
Status transmission
Initial monitor processing
10sec
Monitor processing

FIG. 25

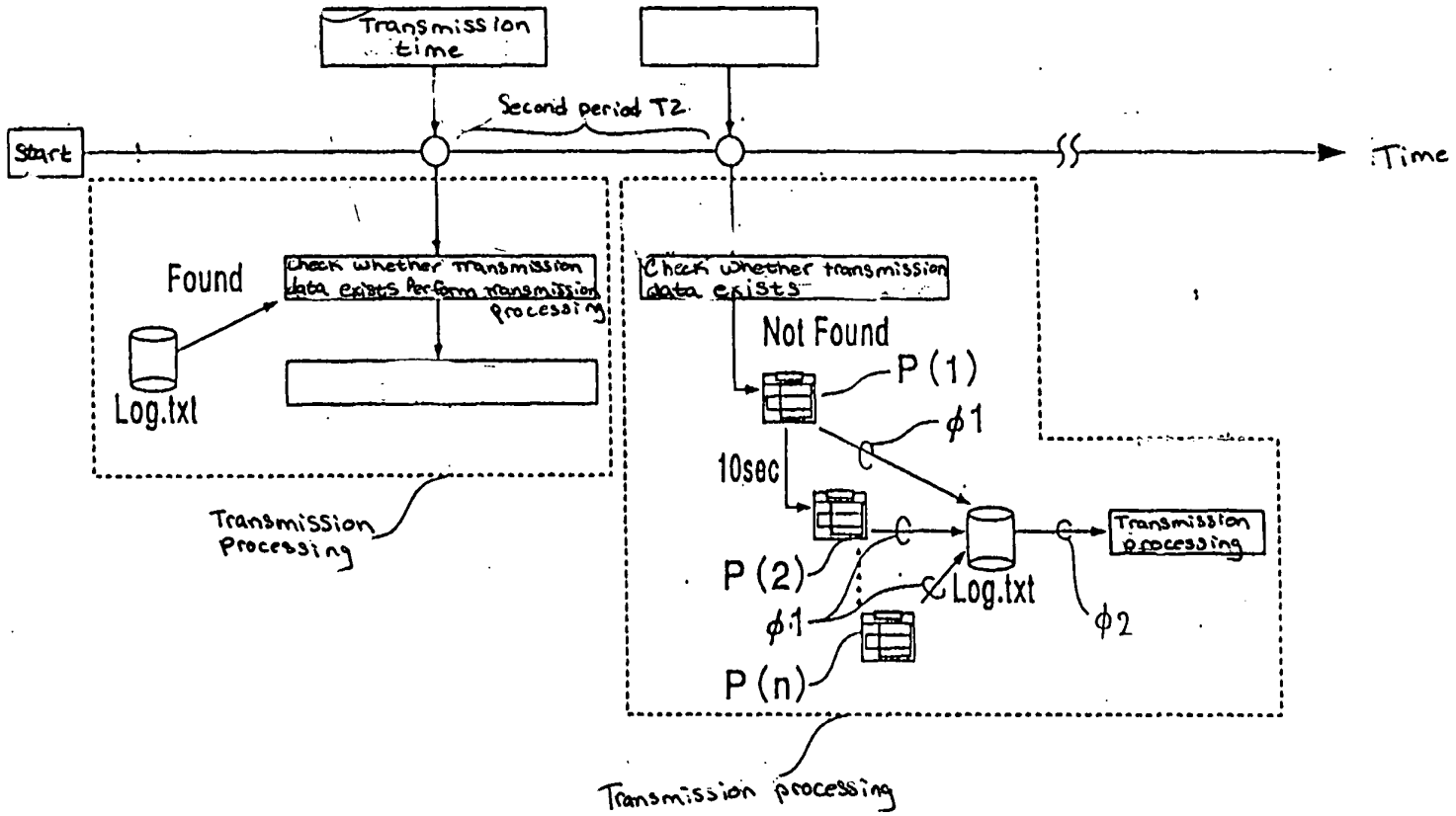

Transmission time
Second period T2
Start
Time
Found
Check whether transmission data exists Perform transmission processing
Log.txt
Transmission Processing
Check whether transmission data exists
Not Found
P (1)
φ1
10sec
P (2)
φ1
P (n)
Log.txt
Transmission processing
φ2
Transmission processing

FIG. 6

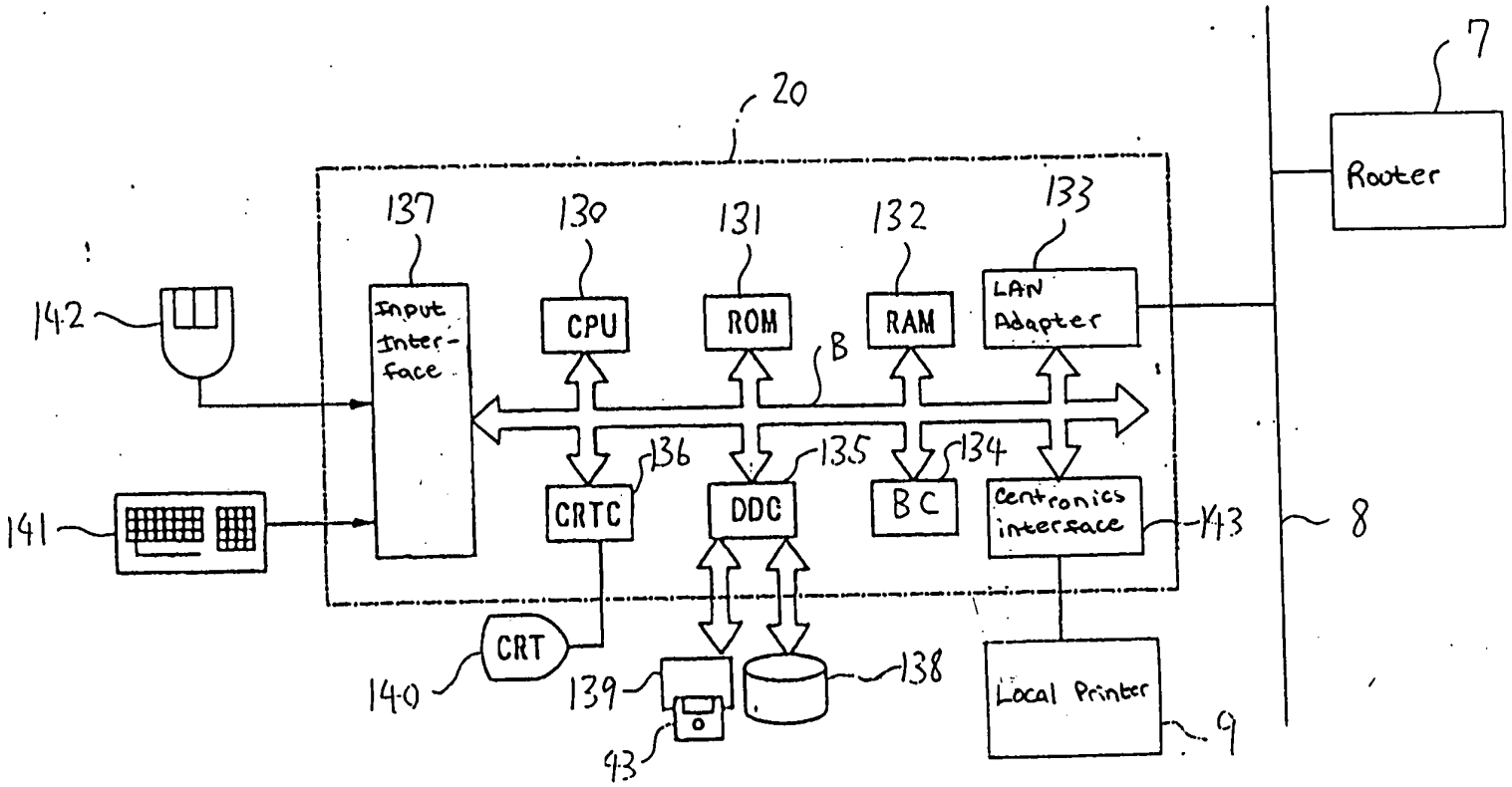

20
7
Router
137
130
131
132
133
142
Input Inter-face
CPU
ROM
RAM
LAN Adapter
B
136
135
134
141
CRTC
DDC
BC
Centronics interface
143
8
CRT
140
139
138
Local Printer
9
93

FIG. 27

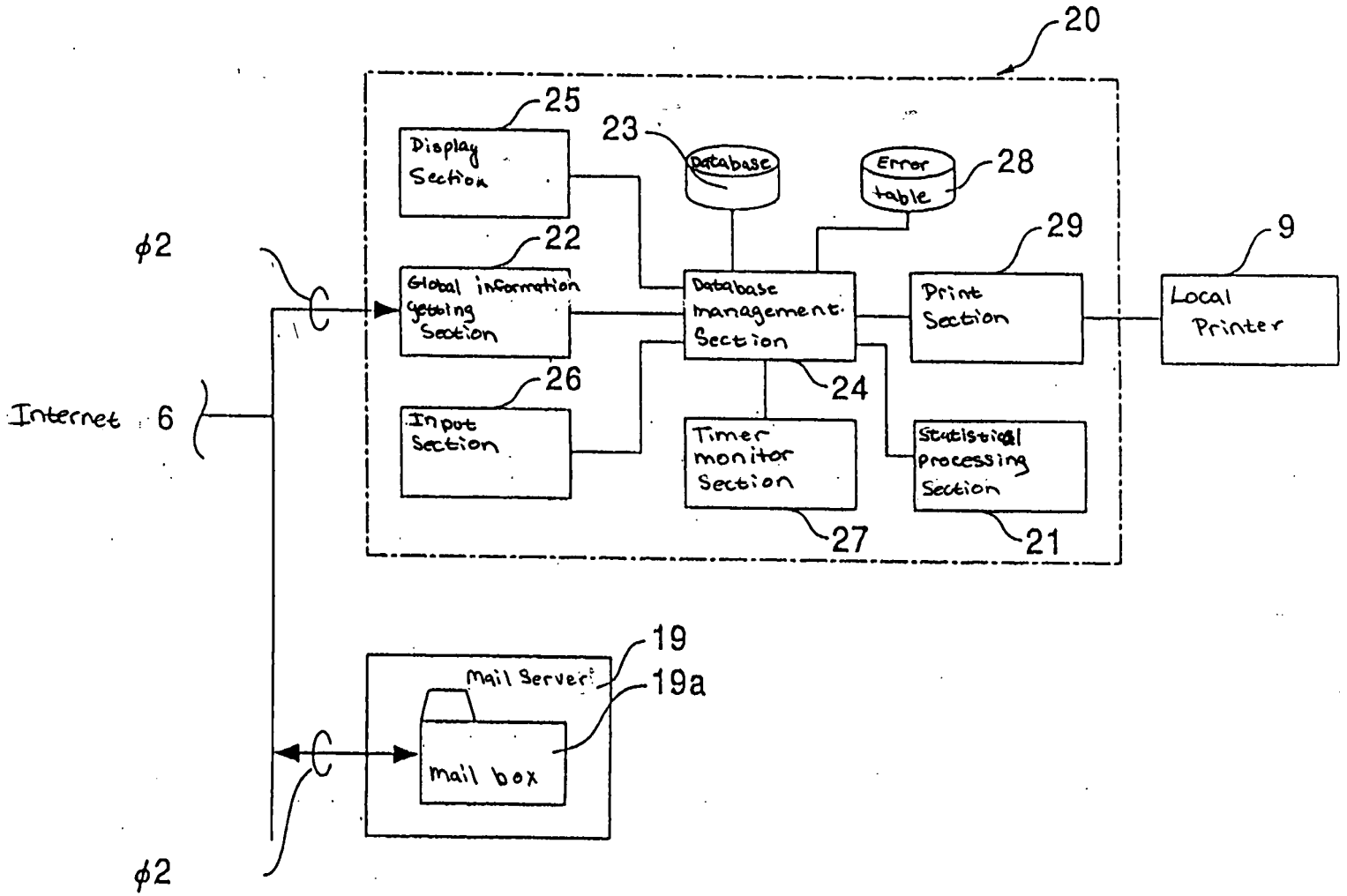

20
25
Display Section
23
Database
Error table
28
29
9
22
Global information getting Section
Database management Section
Print Section
Local Printer
φ2
Internet
6
26
Input Section
Timer monitor Section
24
Statistical processing Section
27
21
19
Mail Server
19a
mail box
φ2

FIG 28A

Agent information	Company Name	Text	100	Agent installation agency name
	Installation Date	Date/time	8	Monitor agent installation date and time.
	Tel. Number	Text	20	Agency telephone number.
	Fax Number	Text	20	Agency fax number.
	Administrator	Text	100	Person in charge of administrating monitor agent.
	Remarks	Text	255	Information.
	Monitor interval	Number	4	Reception party address reception interval of mail sent from customers.
	Non-reception determination criterion	Number	1	Timer specification of interval specification for non-reception determination
	Non-reception determination	Number	4	Non-Reception determination time.
	System log size number	Number	4	Number of records to display past information of printer status.
Customer Information	Customer Code	Number	4	Code assigned by system.
	Company name	Text	100	Customer name.
	Customer pilot Tel. Number	Text	20	Pilot Tel. Number of customer.
	Customer pilot fax number	Text	20	Pilot fax number of customer.
	Address 1	Text	255	Customer address 1
	Address 2	Text	255	Customer address 2
	Representative	Text	100	Customer representative
	e-mail address	Text	128	Mail address of machine in which monitor agent is installed.
	Administrator mail address	Text	128	Mail address of monitor agent administrator.
	Last update date and time	Date/Time	8	Information update date and time.
	Remarks	Text	t255	Remarks information.
	Error Level	Text	1	Most recent status - A: Fatal, B: Warning, C: Information, D: Default.
	Agency memo	Memo		Agency memo is stored
	Transmission setting	Text	1	Interval specification or time specification for transmission.
	Transmission day units	Text	1	Day intervals of interval specification transmission.
	Transmission time	Text	1	Transmission time.
	Transmission interval	Number	4	Transmission interval.
Printer information	S/N	Text	10	Serial number of printer.
	Customer code	Number	4	External reference to customer code in customer information.
	Printer name	Text	40	Printer name.
	Printer type	Text	10	Printer Type: Page, SIDM_1, SIDM_2, INJ_1, INJ_2, No type.

FIG 28B

	Administration department	Text	100	Administration department of printer.
	Status text	Text	5	Storage of status code from printer.
	Error level	Text	1	Most recent status. A: Fatal, B: Warning, C:Information, D: Default.
	Information getting date and time	Date/time	8	Date and time at which information was gotten.
	Information update and time	Date/Time	8	Date and time at which information was updated.
	Agency memo	Memo		Memo in agency.
Status information	S/N	Text	10	External reference to S/N in printer information.
	Information getting date and time	Date/time	8	Date and time at which information was gotten.
	Error level	Text	1	History status for each printer A: Fatal, B: Warning, C: Information.
	Status	Text	5	Mail text sent from monitor agent.
	Toner/Ink remaining amount	Number	4	Toner/Ink remaining amount in printer.
	Ink remaining amount 1	Number	4	Ink remaining amount in printer (Black).
	Ink remaining amount 2	Number	4	Ink remaining amount in printer (Yellow).
	Ink remaining amount 3	Number	4	Ink remaining amount in printer (Magenta).
	Ink remaining amount 4	Number	4	Ink remaining amount in printer (Cyan).
	Ink remaining amount 5	Number	4	Ink remaining amount in printer (Light Cyan).
	Ink remaining amount 6	Number	4	Ink remaining amount in printer (Light Magenta).
	Total number of planes	Number	4	Total number of planes.
	Total number of print sheets in terms of monochrome print	Number	4	Total number of print sheets in terms of waste toner.
	Color ratio	Number	4	Color print ratio.
	Consumables	Text	1	Consumable flat 1: Consumable, 0: others.
	Photosensitive unit	Number	4	Remaining life of photosensitive unit.
	Oil roll	number	4	Roll remaining amount.
	Waste toner.	Number	4	Waste toner box use amount.

FIG. 29

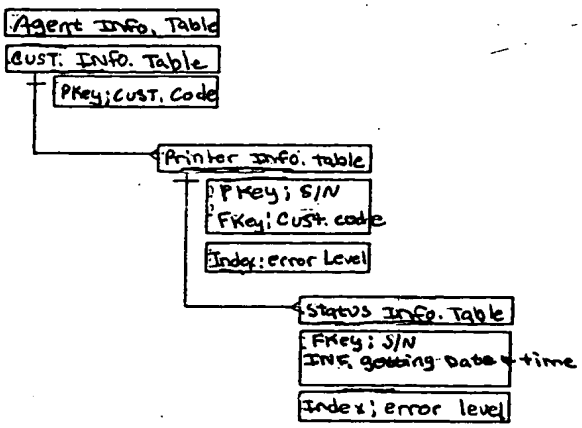

Agent Info. Table
Cust. Info. Table
PKey; Cust. Code
Printer Info. table
PKey; S/N
FKey; Cust. code
Index: error Level
Status Info. Table
FKey; S/N
INF, printing Date + time
Index; error level

FIG. 30

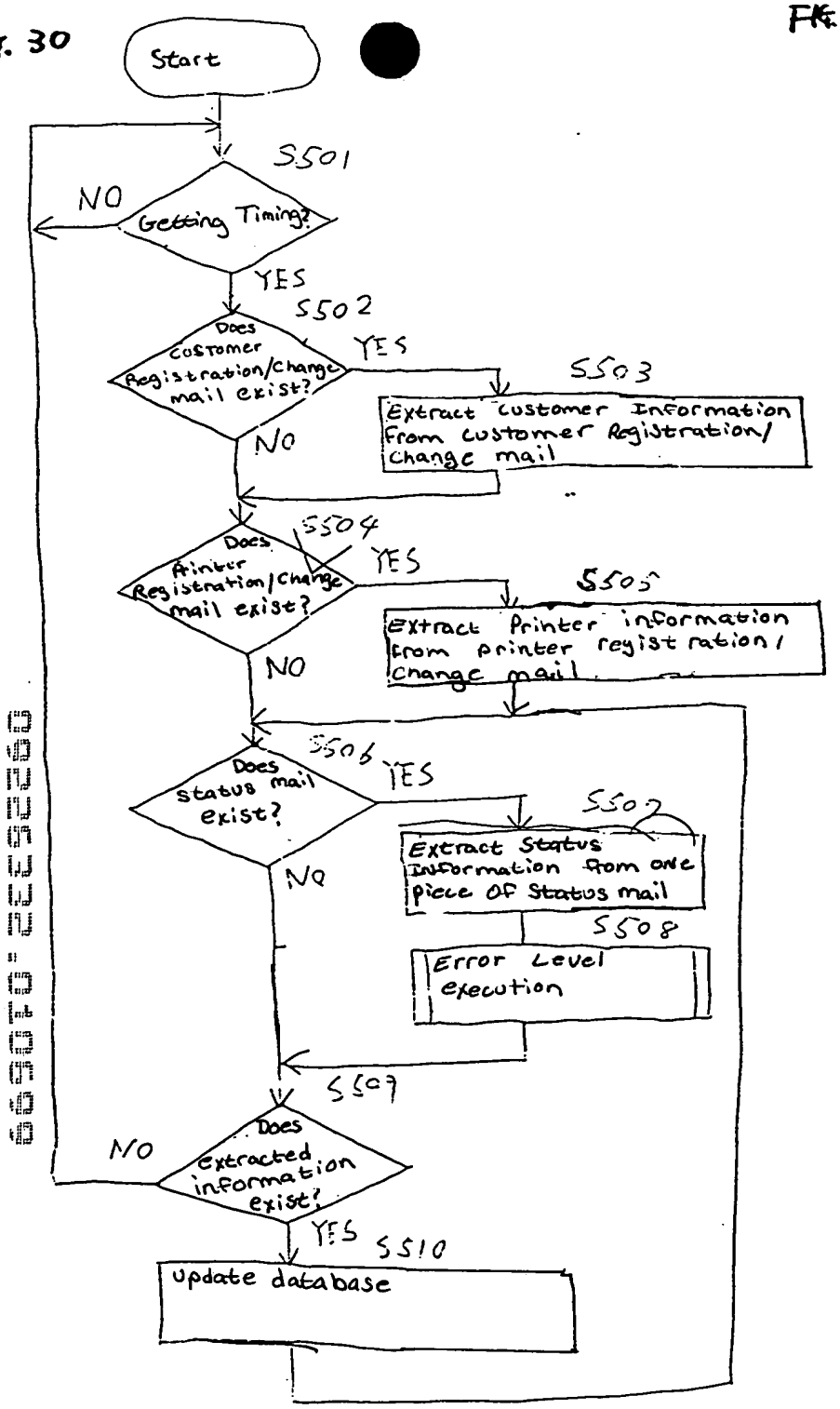

Start
S501
Getting Timing?
NO
YES
S502
Does Customer Registration/Change mail exist?
YES
S503
Extract customer information from customer Registration/ Change mail
NO
S504
Does Printer Registration/Change mail exist?
YES
S505
Extract Printer information from printer registration/ Change mail
NO
S506
Does status mail exist?
YES
S507
Extract Status Information from one piece of Status mail
S508
Error Level execution
NO
S509
Does Extracted information exist?
NO
YES
S510
Update database

FIG. 31

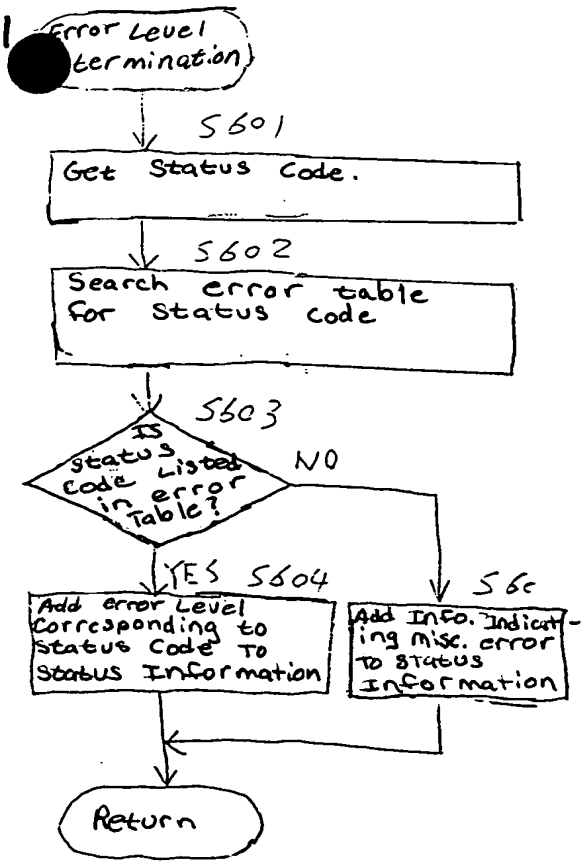

Error Level Determination
S601
Get Status Code.
S602
Search error table for Status Code
S603
Is Status Code Listed in error Table?
NO
YES
S604
Add error Level Corresponding to Status Code To Status Information
S6c
Add Info. Indicating Misc. error To Status Information
Return

FIG. 32

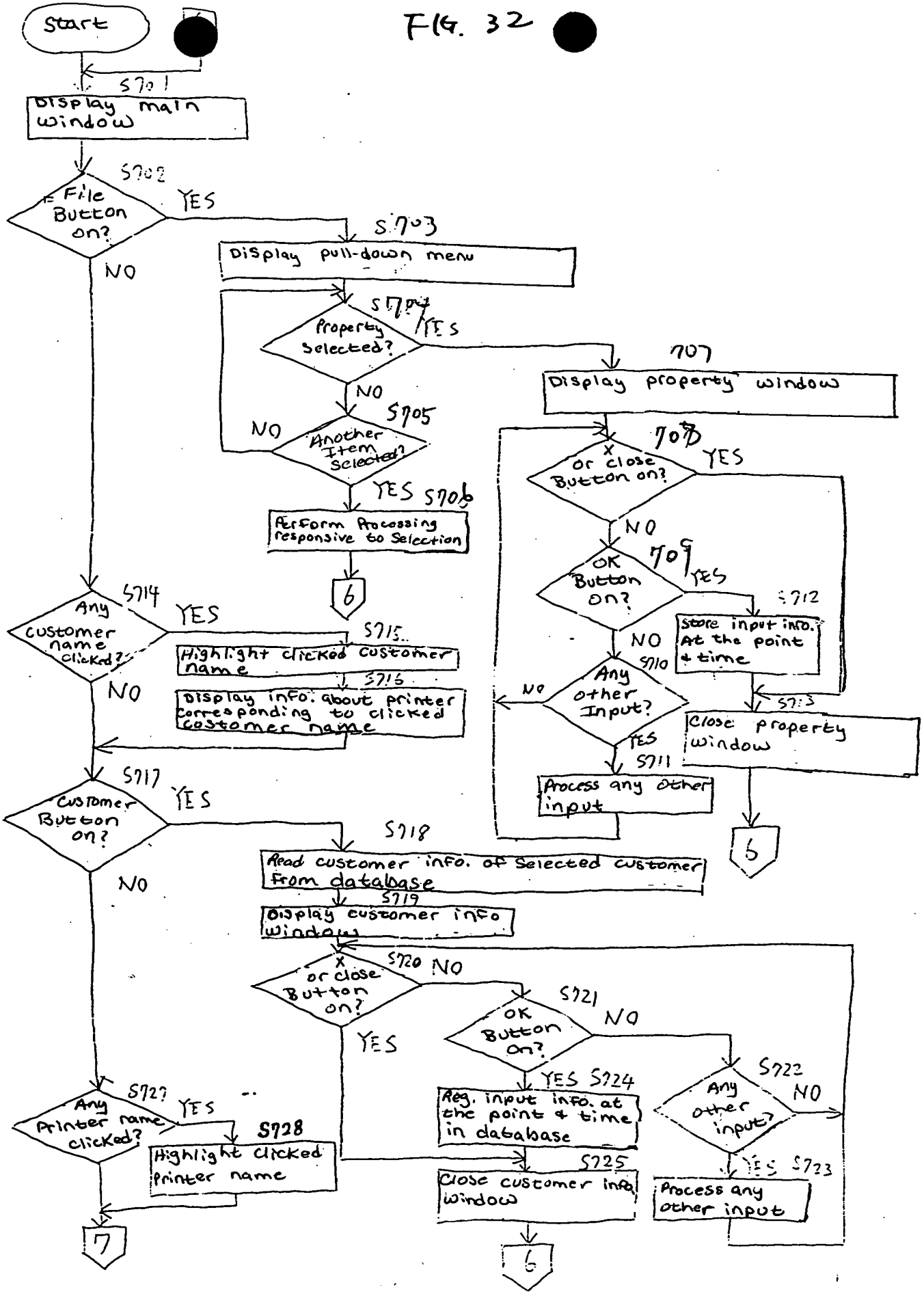

Start
S701
Display main window
S702
File Button on?
YES
NO
S703
Display pull-down menu
S704
Property selected?
YES
NO
S705
Another Item selected?
NO
YES
S706
Perform Processing responsive to Selection
6
S707
Display property window
S708
X or close Button on?
YES
NO
S709
OK Button on?
YES
NO
S712
Store input info. At the point & time
S710
Any other Input?
NO
YES
S711
Process any other input
S713
Close property window
6
S714
Any customer name clicked?
YES
NO
S715
Highlight clicked customer name
S716
Display info. about printer corresponding to clicked customer name
S717
Customer Button on?
YES
NO
S718
Read customer info. of selected customer from database
S719
Display customer info window
S720
X or close Button on?
NO
YES
S721
OK Button on?
NO
YES
S724
Reg. input info. at the point & time in database
S725
Close customer info window
6
S722
Any other input?
NO
YES
S723
Process any other input
S727
Any Printer name clicked?
YES
NO
S728
Highlight clicked printer name
7

FIG. 33

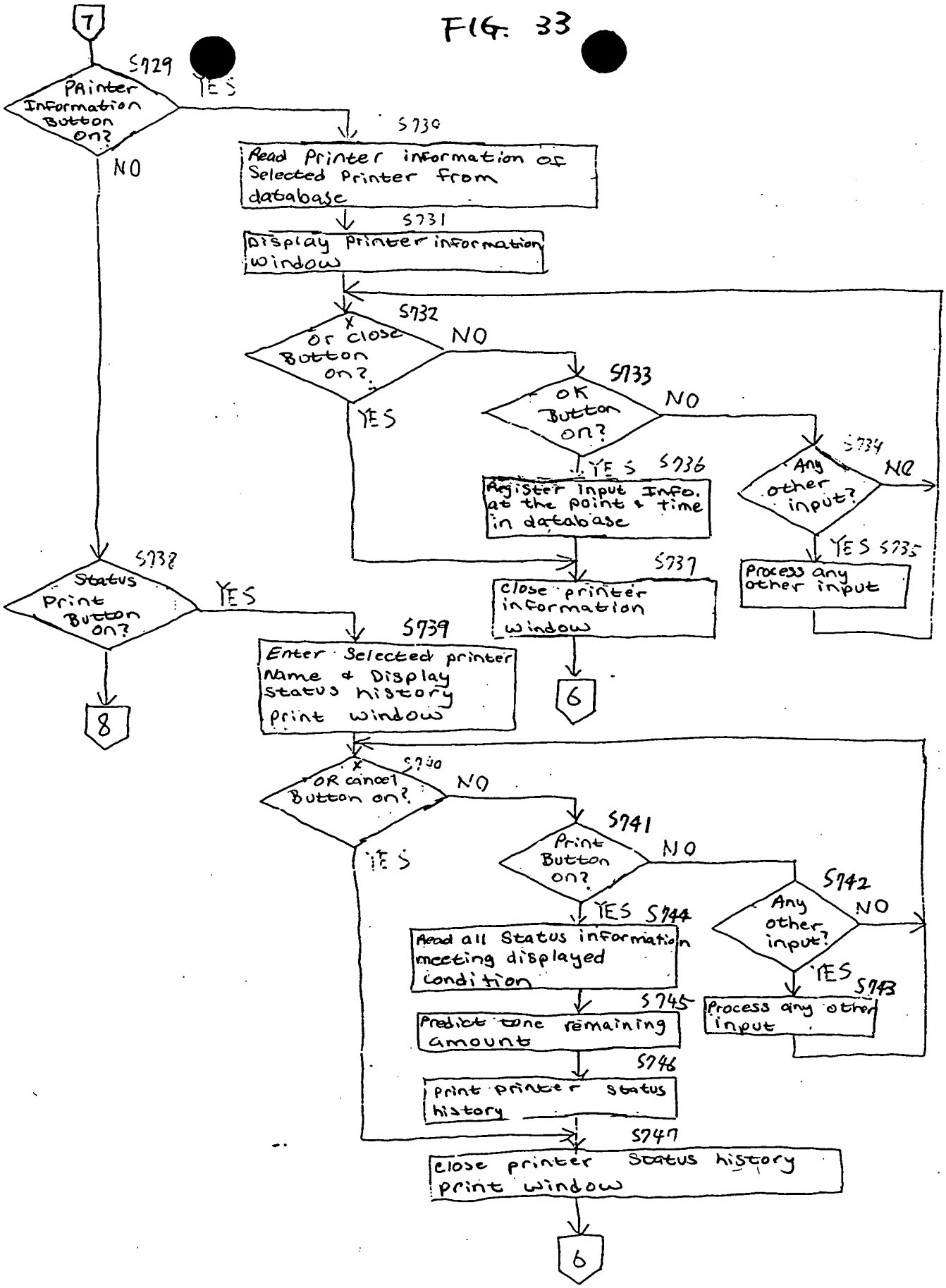


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FIG. 34

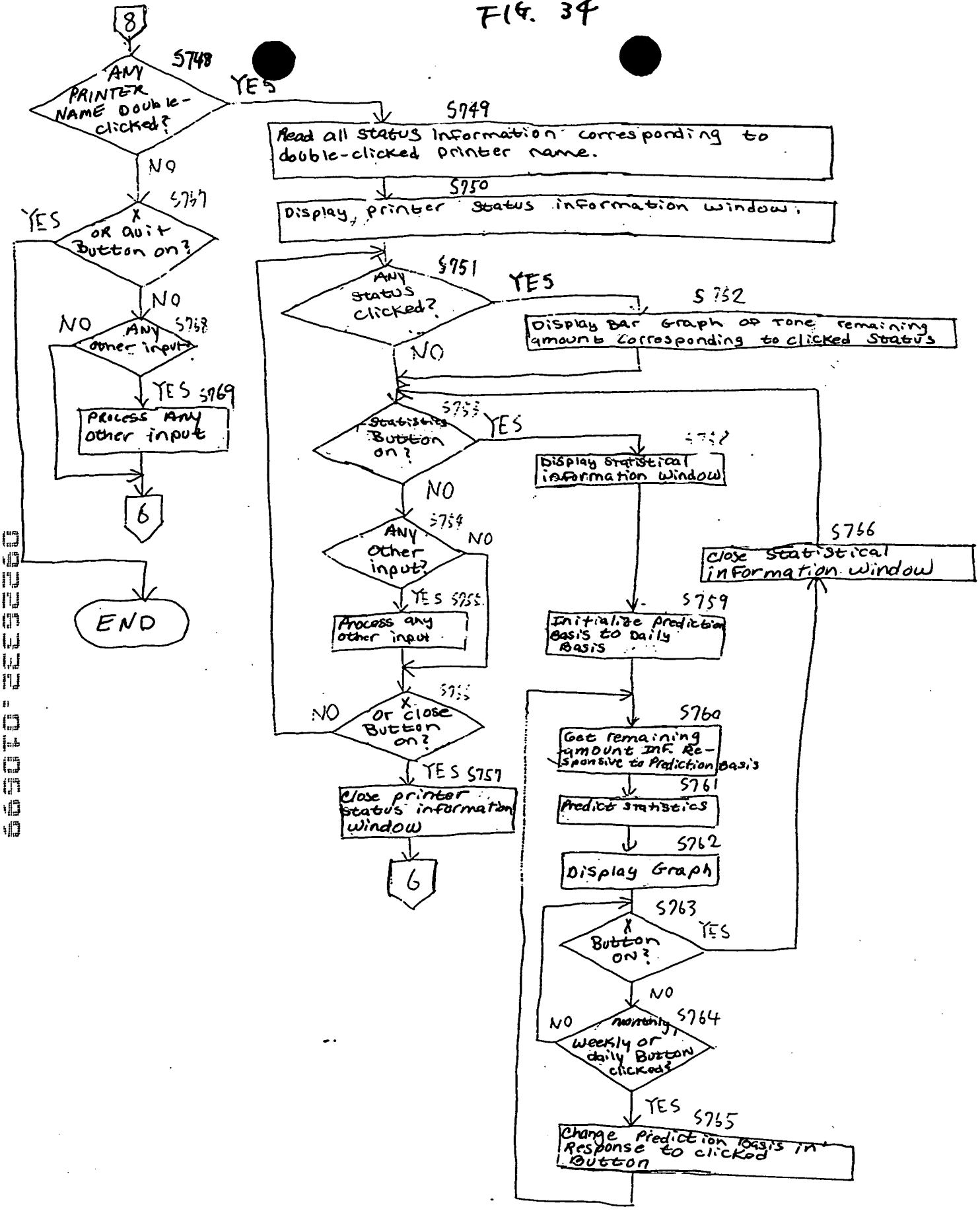

8
S748
ANY PRINTER NAME DOUBLE-CLICKED?
YES
NO
S749
Read all status information corresponding to double-clicked printer name.
S750
Display printer status information window.
S747
X OR QUIT BUTTON ON?
YES
NO
S751
ANY STATUS CLICKED?
YES
S752
Display bar graph of toner remaining amount corresponding to clicked status
NO
S753
STATISTICS BUTTON ON?
YES
S757
Display statistical information window
NO
S754
ANY OTHER INPUT?
NO
YES S755
Process any other input
S756
Close statistical information window
S759
Initialize prediction basis to daily basis
S760
Get remaining amount inf. responsive to prediction basis
S761
Predict statistics
S762
Display Graph
S763
X BUTTON ON?
YES
NO
S764
NO
monthly, weekly or daily button clicked?
YES
S765
Change prediction basis in response to clicked button
S758
X OR CLOSE BUTTON ON?
NO
YES S759
Close printer status information window
6
6
S768
ANY OTHER INPUT?
NO
YES S769
PROCESS ANY OTHER INPUT
6
END

FIG. 35

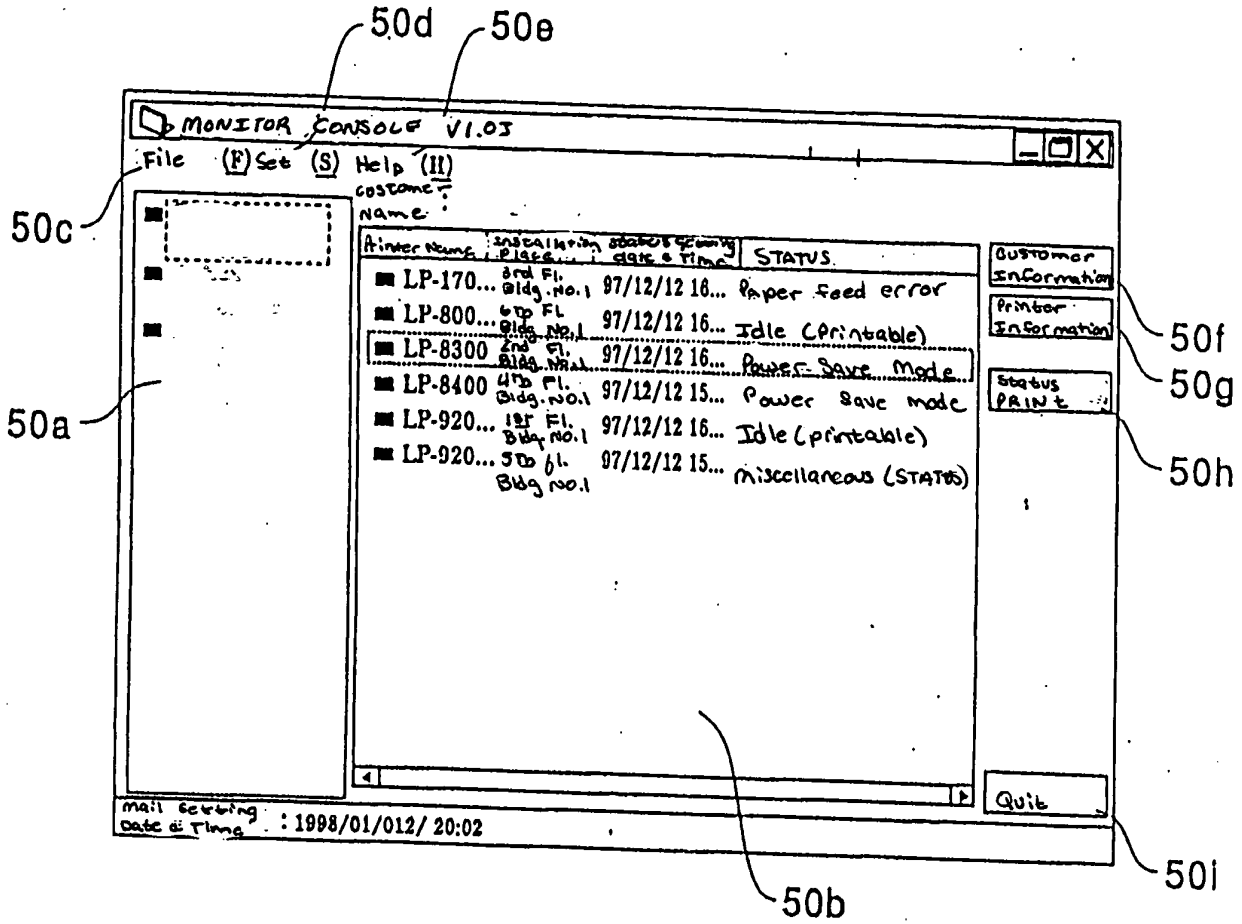

50d
50e
MONITOR CONSOLE V1.03
File
(F) Set
(S) Help
(H)
customer name:
50c
50a
Printer Name
Installation Place
Status Occurring date & time
STATUS
LP-170... 3rd Fl. Bldg. No.1 97/12/12 16... Paper feed error
LP-800... 6th Fl. Bldg. No.1 97/12/12 16... Idle (Printable)
LP-8300 2nd Fl. Bldg. No.1 97/12/12 16... Power Save Mode
LP-8400 4th Fl. Bldg. No.1 97/12/12 15... Power Save mode
LP-920... 1st Fl. Bldg. No.1 97/12/12 16... Idle (printable)
LP-920... 5th fl. Bldg no.1 97/12/12 15... Miscellaneous (STATUS)
Customer Information
Printer Information
Status PRINT
Quit
50f
50g
50h
50i
50b
mail setting Date & Time : 1998/01/012/ 20:02

FIG. 36

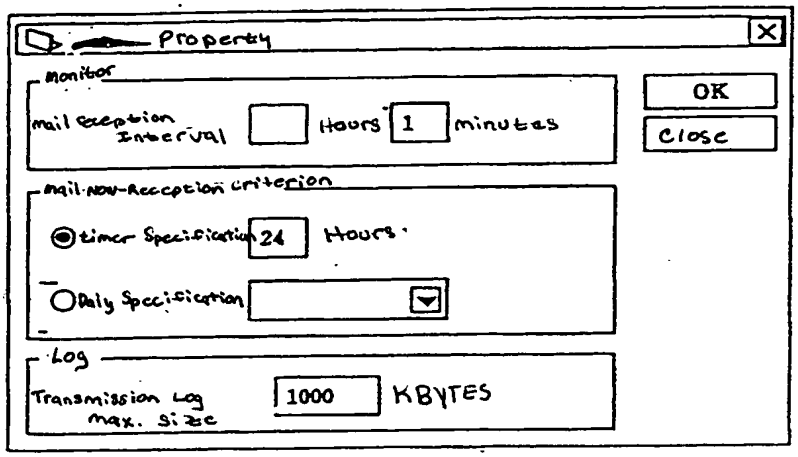

Property
monitor
mail reception Interval
Hours
1
minutes
OK
Close
mail-NOW-Reception criterion
timer Specification
24
Hours
Daily Specification
Log
Transmission Log max. Size
1000
KBYTES

FIG. 37

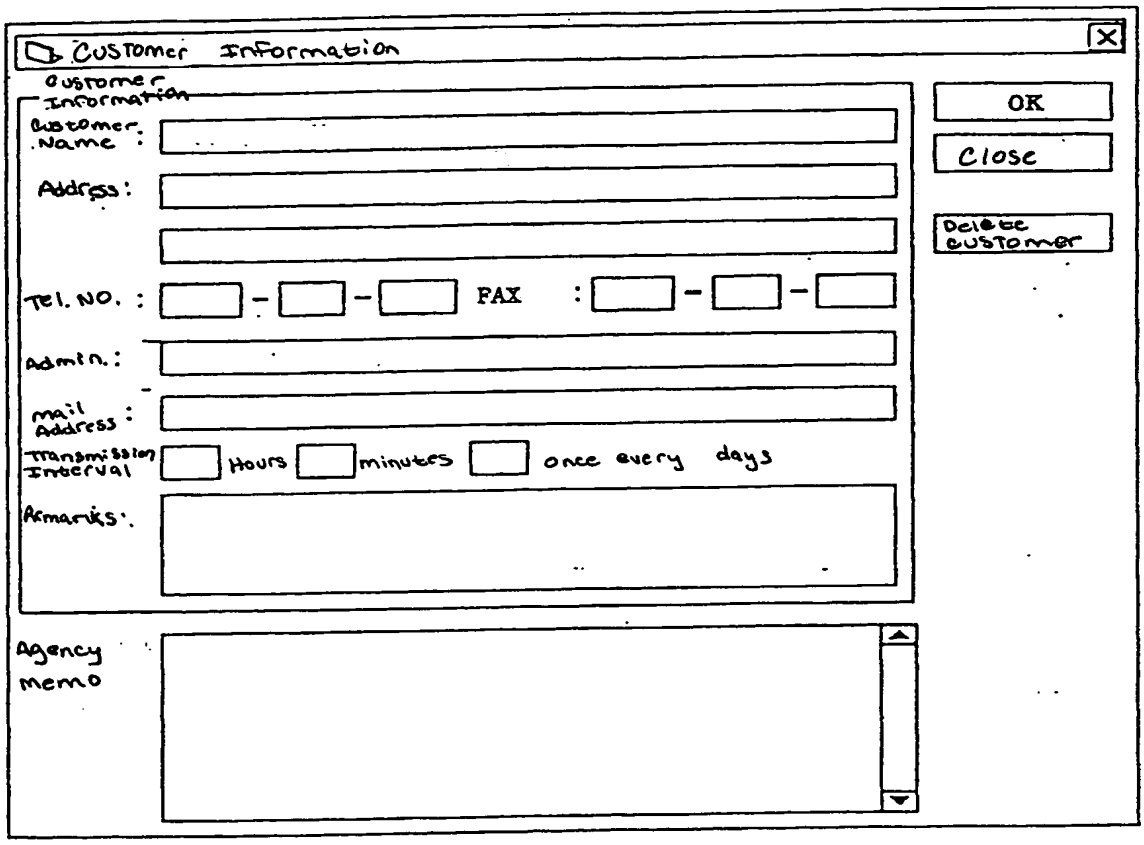

Customer Information
Customer Information
Customer Name :
Address :
Tel. NO. :
FAX :
Admin. :
mail Address :
Transmission Interval
Hours
minutes
once every
days
Armarks :
Agency memo
OK
Close
Delete customer

FIG. 38

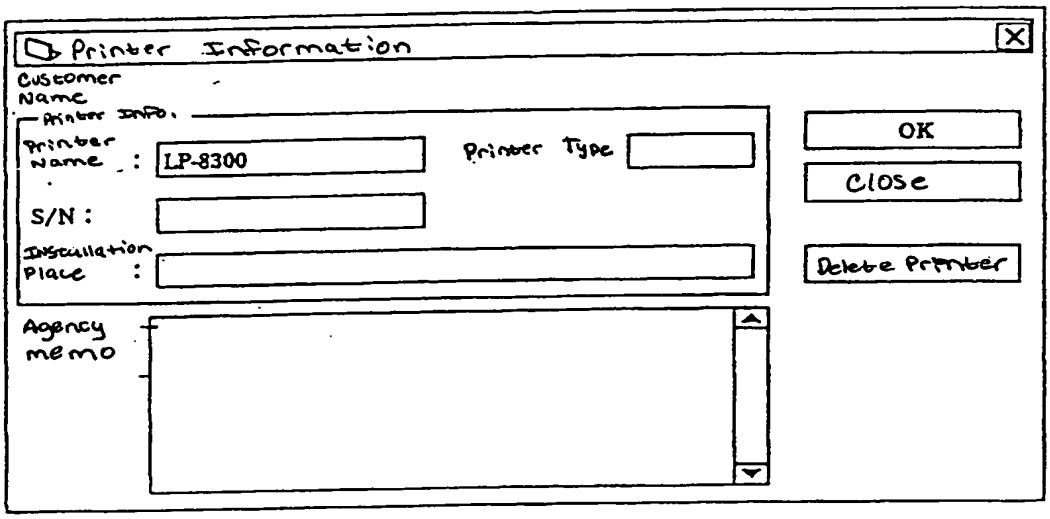
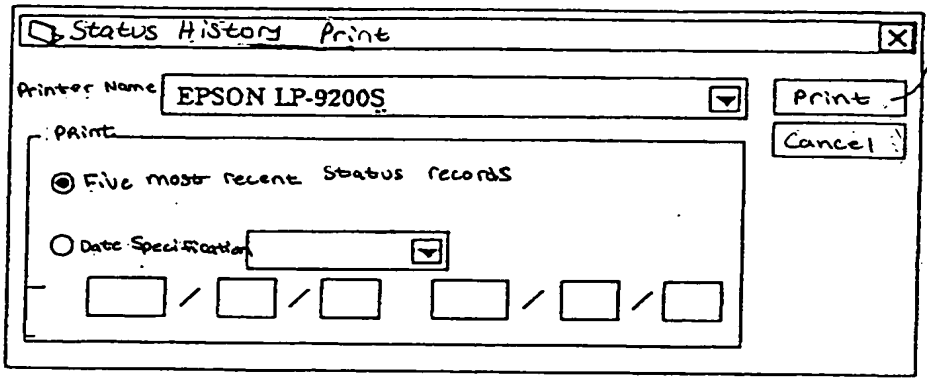

Printer Information
Customer Name
Printer Info.
Printer Name :
LP-8300
Printer Type
S/N :
Installation Place :
Agency memo
OK
Close
Delete Printer

FIG. 39


Status History Print
Printer Name
EPSON LP-9200S
Print
Cancel
Print
Five most recent Status records
Date Specification
/ / / /

56a

FIG. 40A

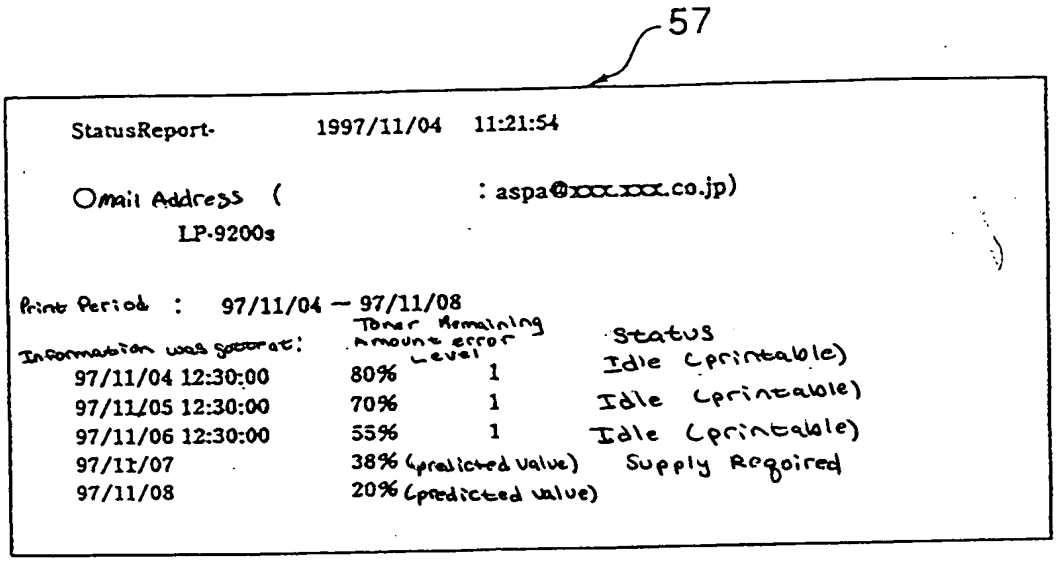


FIG. 40B

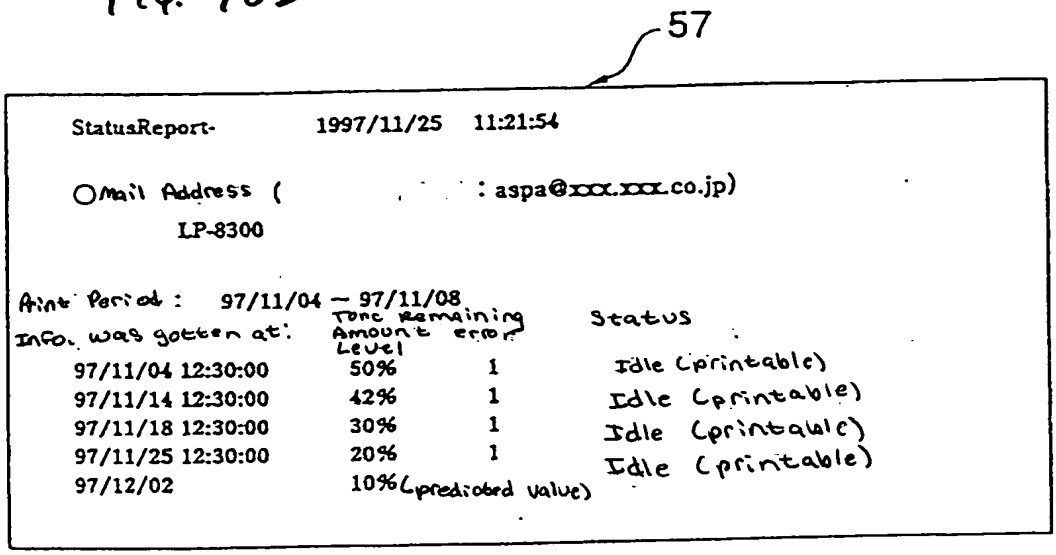


FIG. 41

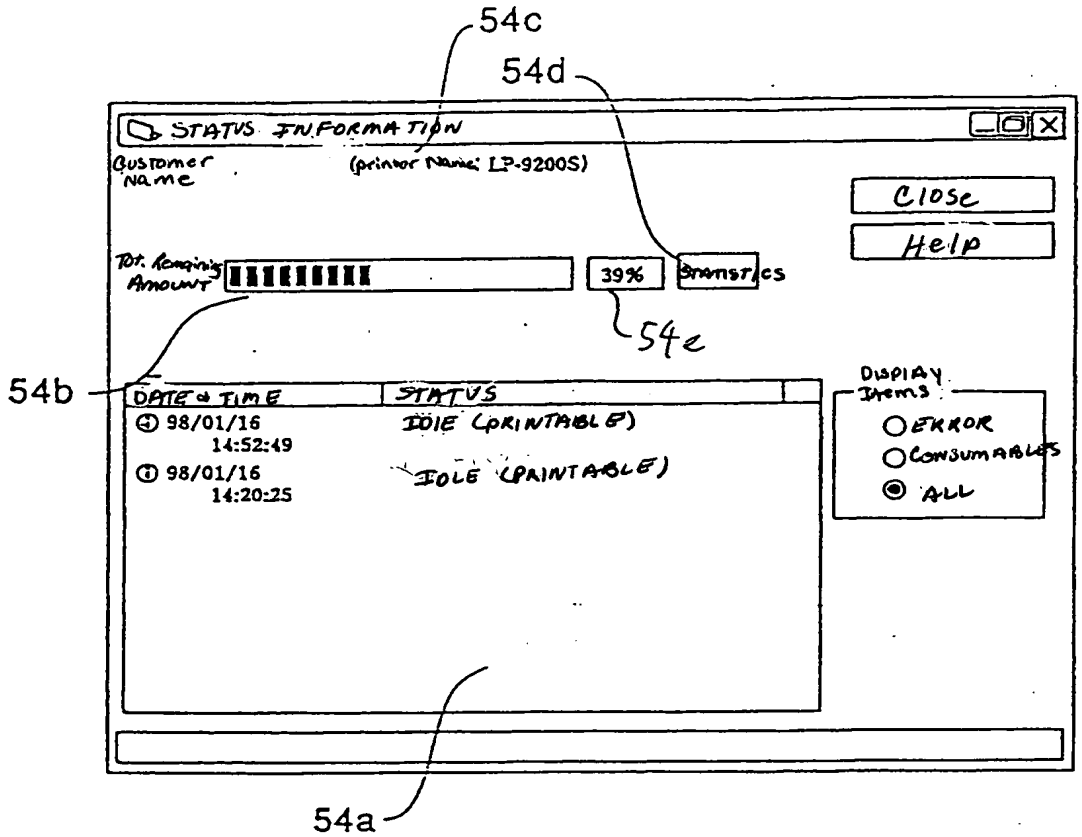

54c
54d
STATUS INFORMATION
Customer Name
(printer Name: LP-9200S)
Close
Help
Tot. Remain Amount
39%
Statistics
54e
54b
DATE & TIME
STATUS
98/01/16 14:52:49
IDLE (PRINTABLE)
98/01/16 14:20:25
IDLE (PRINTABLE)
DISPLAY Items
ERROR
CONSUMABLES
ALL
54a

FIG. 42A

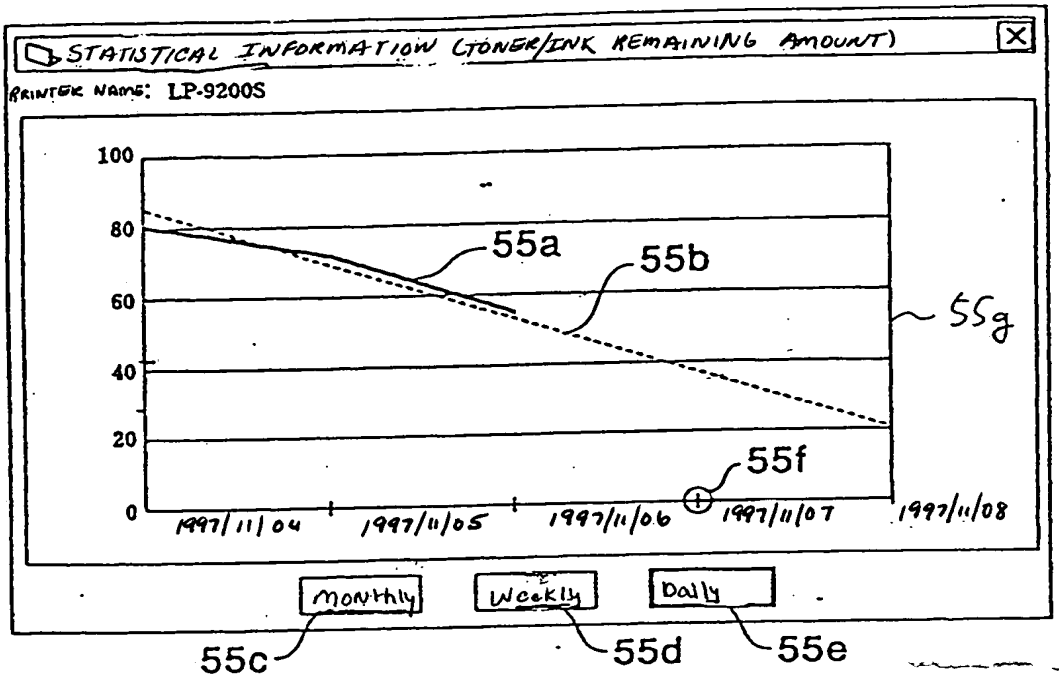
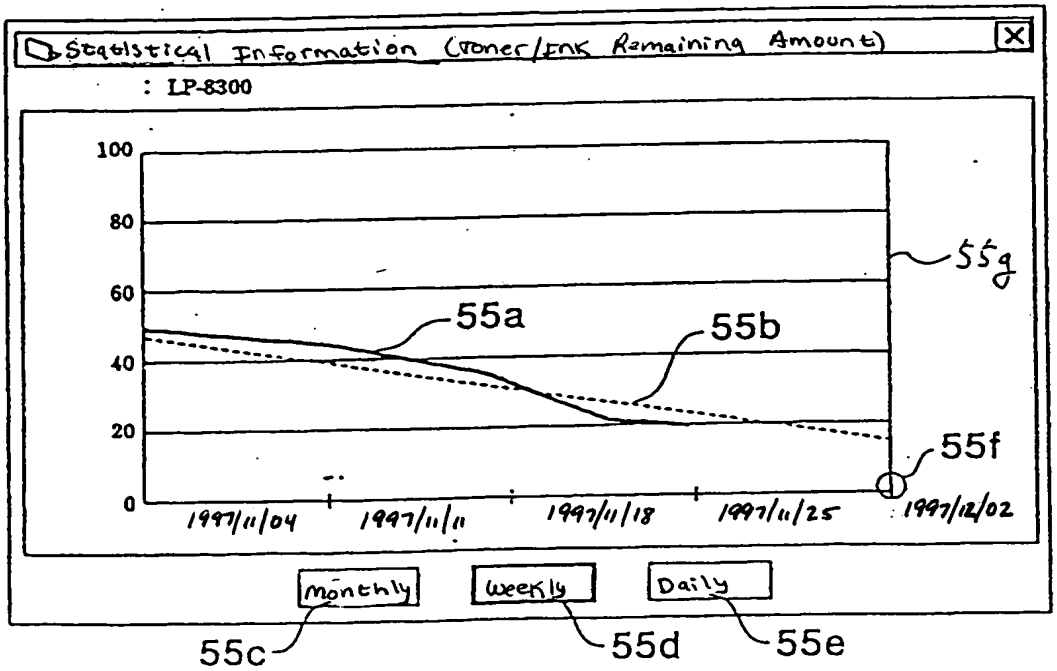



FIG. 42B